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Philyaw

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(54) **INPUT DEVICE HAVING POSITIONAL AND SCANNING CAPABILITIES**

(75) Inventor: **Jeffry Jovan Philyaw**, Dallas, TX (US)

(73) Assignee: **RPX-LV Acquisition LLC**, Wilmington, DE (US)

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(58) **Field of Classification Search** 709/220, 709/230, 203; 705/23; 345/156
See application file for complete search history.

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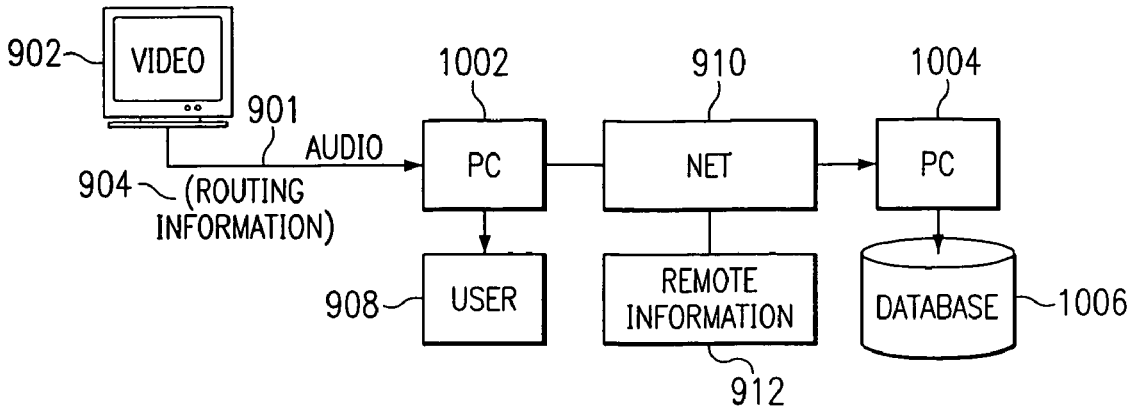
Primary Examiner—Tammy T Nguyen
(74) *Attorney, Agent, or Firm*—Howison & Arnott, L.L.P.

(57) **ABSTRACT**

A multi-purpose input device (**2500**) for providing conventional positional tracking, and one or more read capabilities for automatically connecting a user PC (**302**) to remote node. In one embodiment, a user reads optically encoded indicia (**1606**) of a product by passing the input device (**2500**) thereover. A software interface (**2505**) processes the read information, assembles a message packet, and appends routing information thereto to connect the user PC (**302**) to an ARS (**308**) disposed on a common network (**306**). The ARS (**308**) performs a matching operation with the received product information to obtain an associated network address of a vendor server (**314**) having the desired product information. The ARS (**308**) returns the vendor server address to the user PC (**302**) whereby the vendor advertiser server (**312**) is automatically accessed by the user PC (**302**). The respective product information is then returned from the vendor server (**312**) to the user PC (**302**) for presentation to the user.

10 Claims, 13 Drawing Sheets



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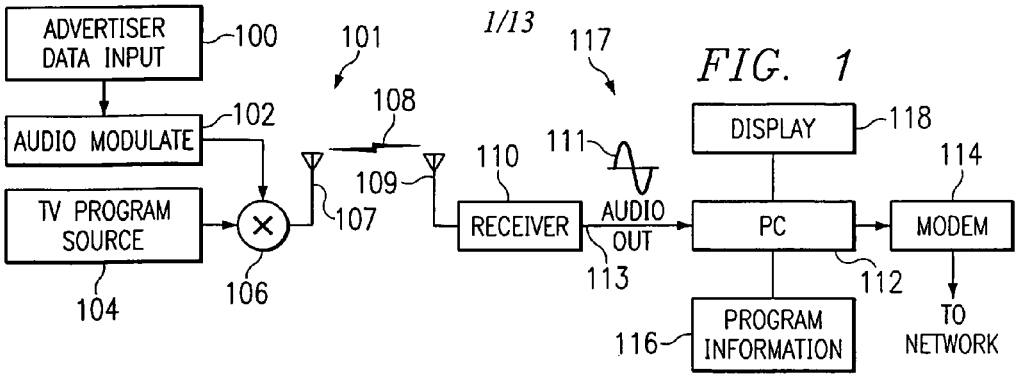
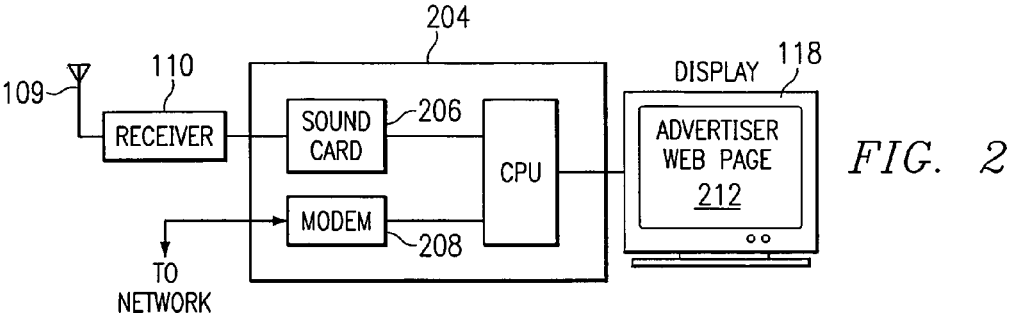
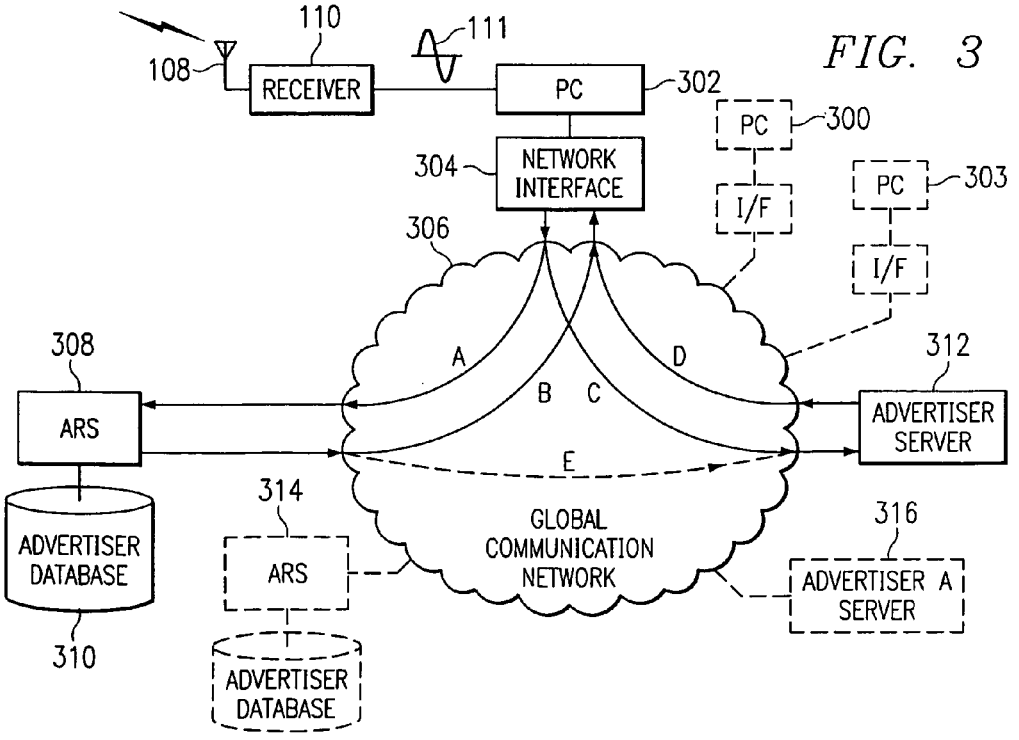

1/13
ADVERTISER DATA INPUT
100
101
117
FIG. 1
AUDIO MODULATE
102
108
DISPLAY
118
TV PROGRAM SOURCE
109
110
111
114
107
RECEIVER
AUDIO OUT
PC
MODEM
104
106
113
112
116
PROGRAM INFORMATION
TO NETWORK


204
109
110
RECEIVER
SOUND CARD
206
CPU
DISPLAY
118
ADVERTISER WEB PAGE
212
MODEM
208
TO NETWORK
FIG. 2


110
111
FIG. 3
108
RECEIVER
PC
302
PC
300
304
NETWORK INTERFACE
I/F
PC
303
306
I/F
308
A
D
312
B
C
ARS
ADVERTISER SERVER
E
314
316
ADVERTISER DATABASE
GLOBAL COMMUNICATION NETWORK
ARS
ADVERTISER A SERVER
310
ADVERTISER DATABASE

PATH A: SOURCE TO ARS

FIG. 4a

PATH B: ARS TO SOURCE

FIG. 4b

PATH C: SOURCE TO ADVERTISER

FIG. 4c

PATH D: ADVERTISER TO SOURCE

FIG. 4d

PATH E: ARS TO ADVERTISER (OPTIONAL)

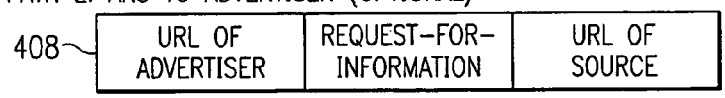


FIG. 4e

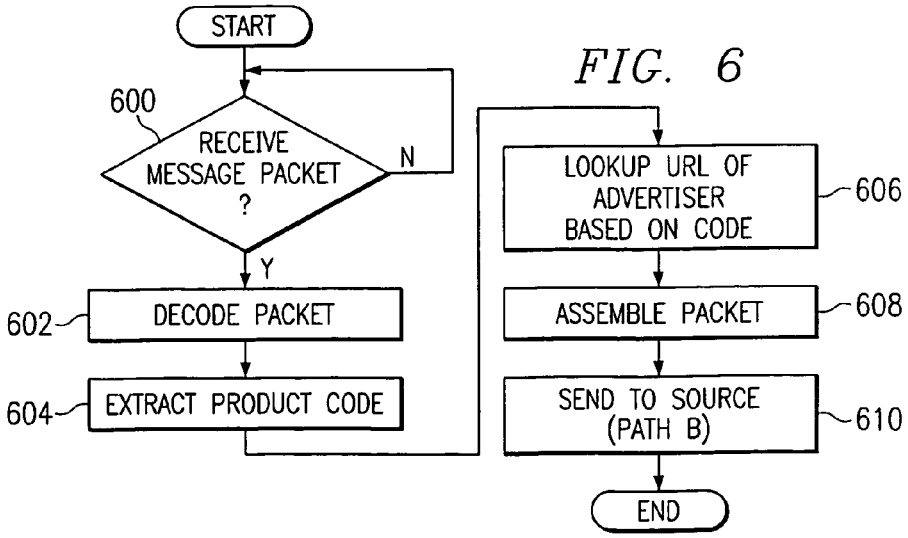


FIG. 6

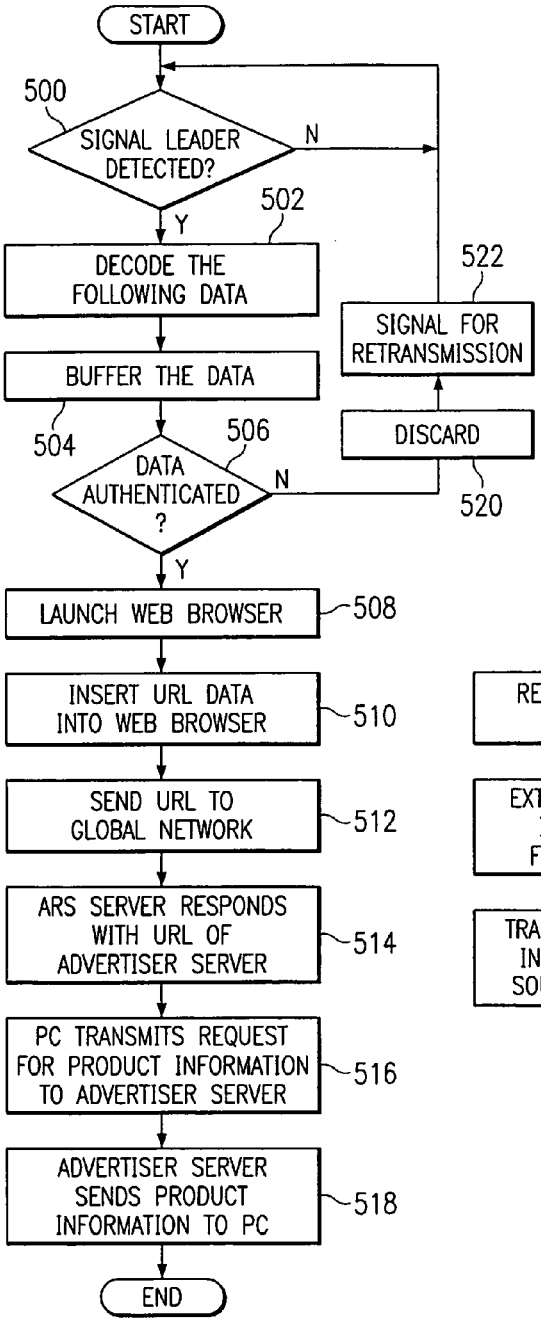

START
500
SIGNAL LEADER DETECTED?
N
Y
502
DECODE THE FOLLOWING DATA
BUFFER THE DATA
504
506
DATA AUTHENTICATED ?
N
Y
522
SIGNAL FOR RETRANSMISSION
DISCARD
520
LAUNCH WEB BROWSER
508
INSERT URL DATA INTO WEB BROWSER
510
SEND URL TO GLOBAL NETWORK
512
ARS SERVER RESPONDS WITH URL OF ADVERTISER SERVER
514
PC TRANSMITS REQUEST FOR PRODUCT INFORMATION TO ADVERTISER SERVER
516
ADVERTISER SERVER SENDS PRODUCT INFORMATION TO PC
518
END

FIG. 5

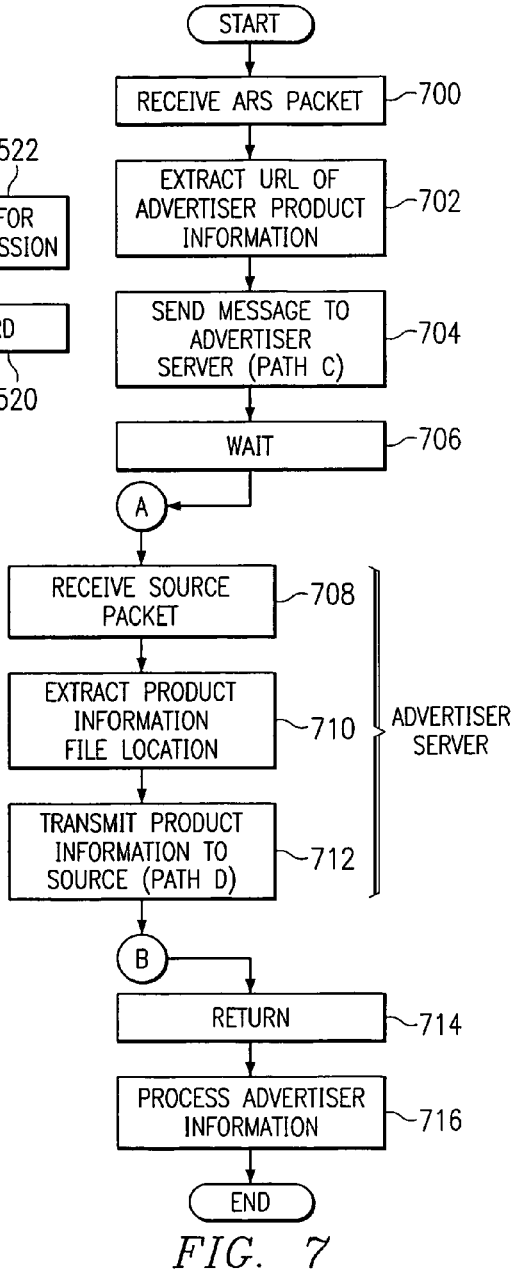
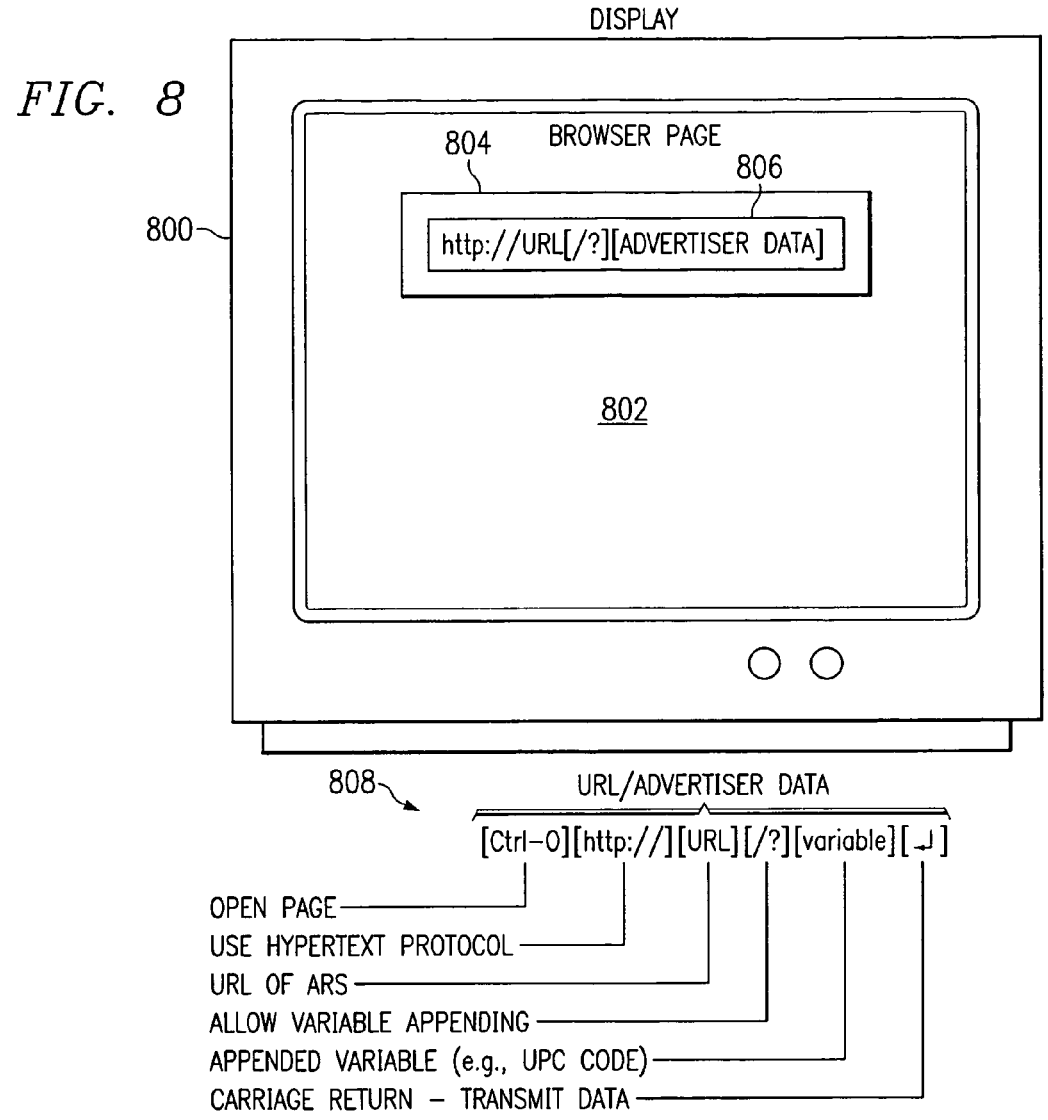

START
RECEIVE ARS PACKET
700
EXTRACT URL OF ADVERTISER PRODUCT INFORMATION
702
SEND MESSAGE TO ADVERTISER SERVER (PATH C)
704
WAIT
706
A
RECEIVE SOURCE PACKET
708
EXTRACT PRODUCT INFORMATION FILE LOCATION
710
TRANSMIT PRODUCT INFORMATION TO SOURCE (PATH D)
712
ADVERTISER SERVER
B
RETURN
714
PROCESS ADVERTISER INFORMATION
716
END

FIG. 7

FIG. 8


DISPLAY
800
804
BROWSER PAGE
806
http://URL[/?][ADVERTISER DATA]
802
808
URL/ADVERTISER DATA
[Ctrl-O][http://][URL][/?][variable][↵]
OPEN PAGE
USE HYPERTEXT PROTOCOL
URL OF ARS
ALLOW VARIABLE APPENDING
APPENDED VARIABLE (e.g., UPC CODE)
CARRIAGE RETURN – TRANSMIT DATA

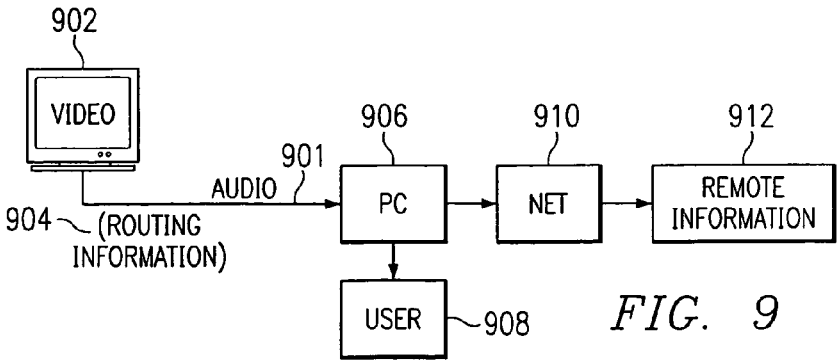

902
VIDEO
906
910
912
901
AUDIO
PC
NET
REMOTE INFORMATION
904
(ROUTING INFORMATION)
USER
908

FIG. 9

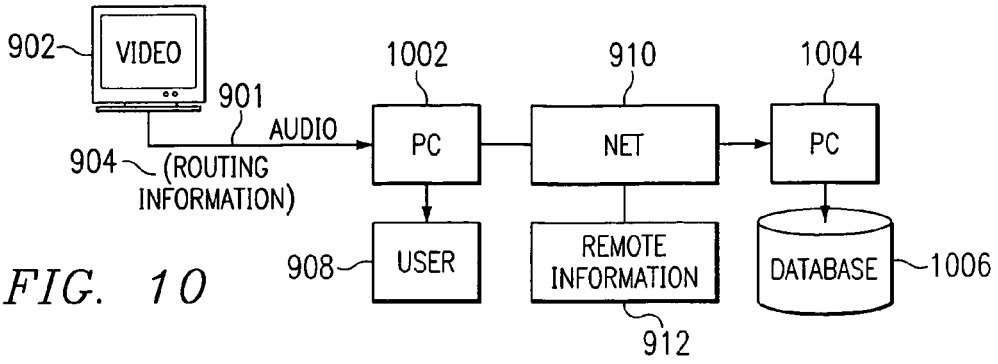


FIG. 10

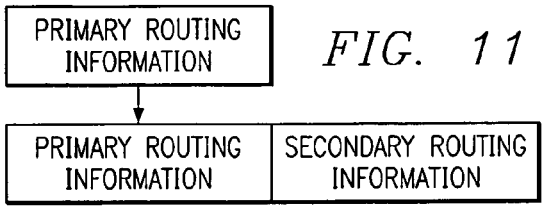


FIG. 11

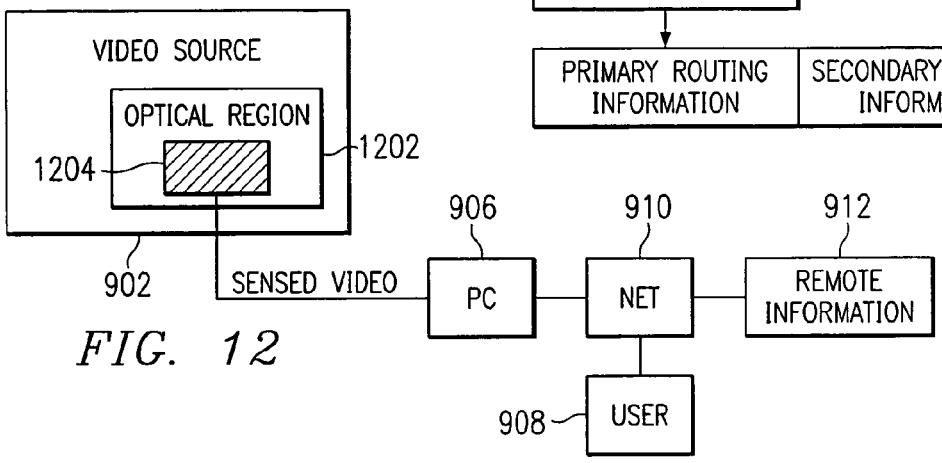


FIG. 12

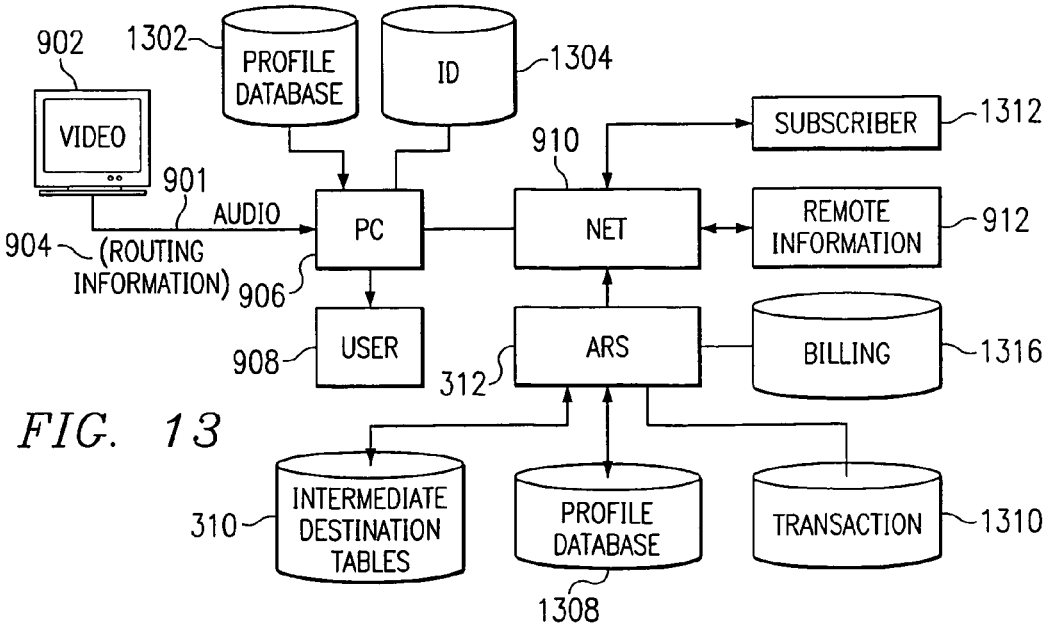


FIG. 13

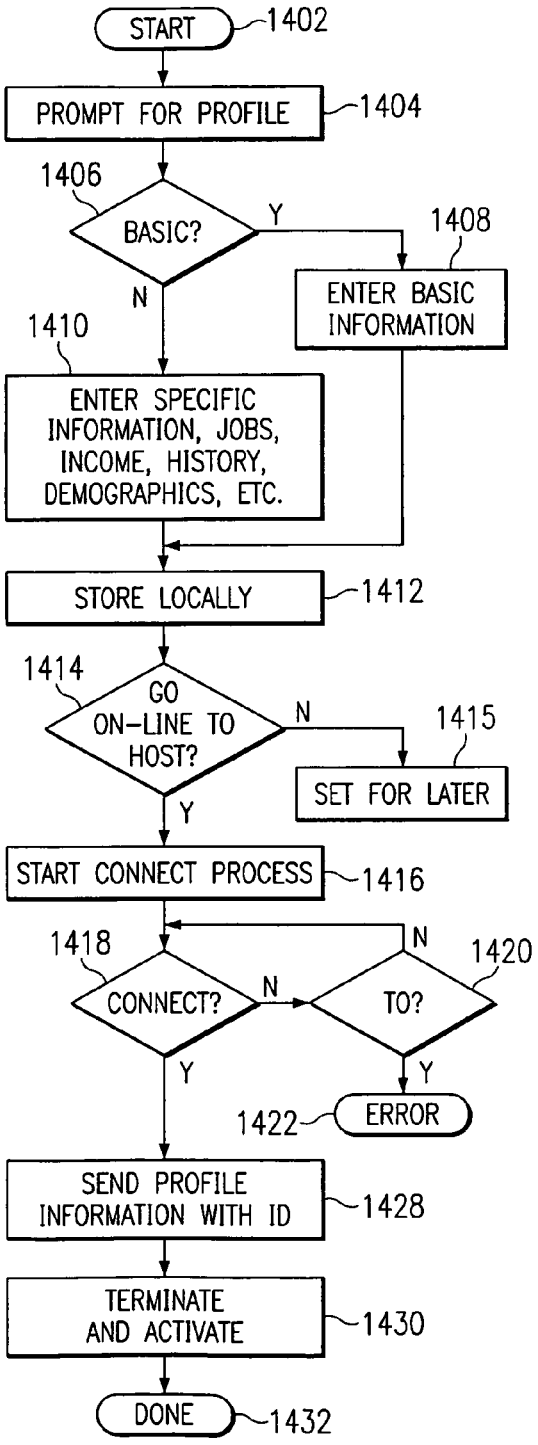

START
1402
PROMPT FOR PROFILE
1404
1406
BASIC?
Y
1408
ENTER BASIC INFORMATION
N
1410
ENTER SPECIFIC INFORMATION, JOBS, INCOME, HISTORY, DEMOGRAPHICS, ETC.
STORE LOCALLY
1412
1414
GO ON-LINE TO HOST?
N
1415
SET FOR LATER
Y
START CONNECT PROCESS
1416
1418
CONNECT?
N
N
1420
TO?
Y
Y
1422
ERROR
SEND PROFILE INFORMATION WITH ID
1428
TERMINATE AND ACTIVATE
1430
DONE
1432

FIG. 14

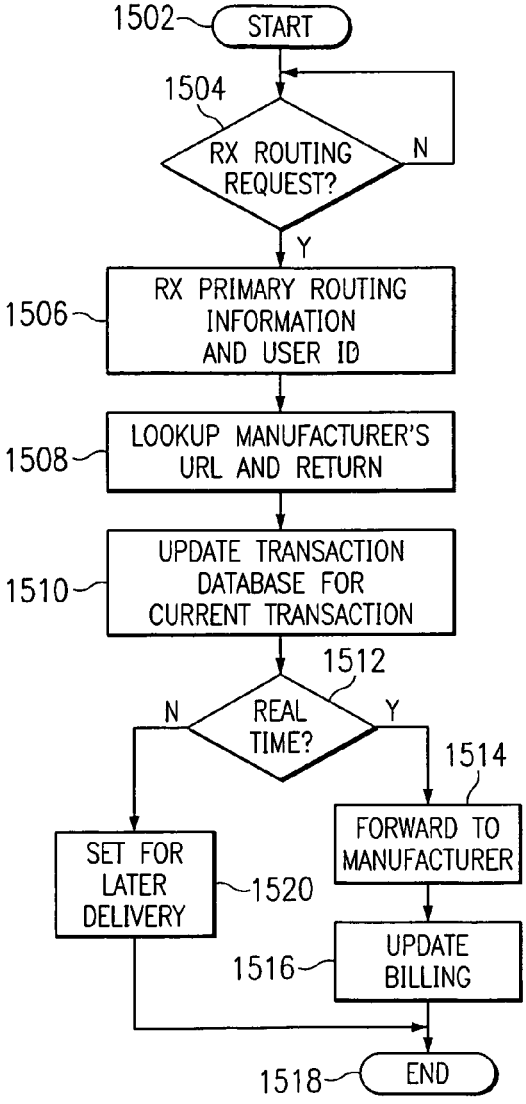

1502
START
1504
RX ROUTING REQUEST?
N
Y
1506
RX PRIMARY ROUTING INFORMATION AND USER ID
1508
LOOKUP MANUFACTURER'S URL AND RETURN
1510
UPDATE TRANSACTION DATABASE FOR CURRENT TRANSACTION
1512
N
REAL TIME?
Y
1514
FORWARD TO MANUFACTURER
SET FOR LATER DELIVERY
1520
1516
UPDATE BILLING
1518
END

FIG. 15

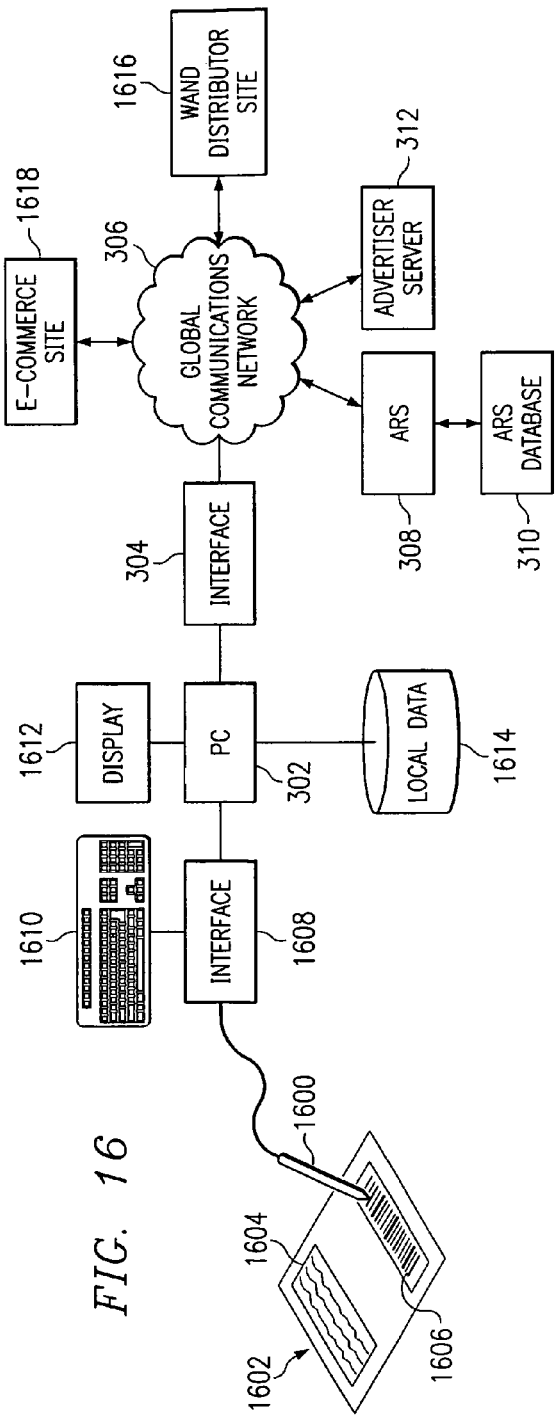


FIG. 16

FIG. 18

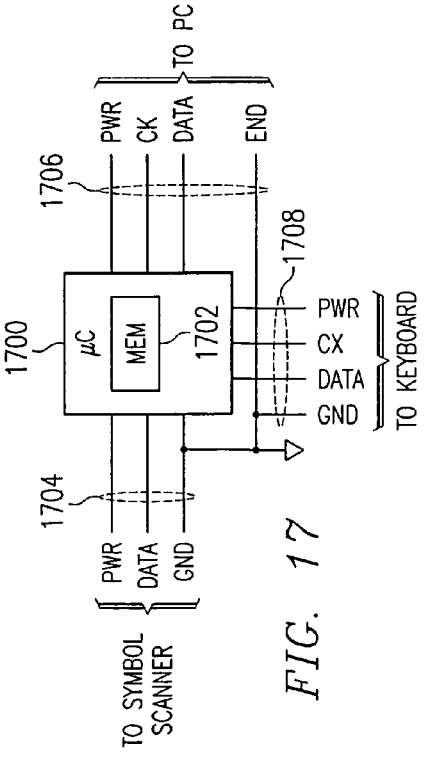


FIG. 17

FIG. 19

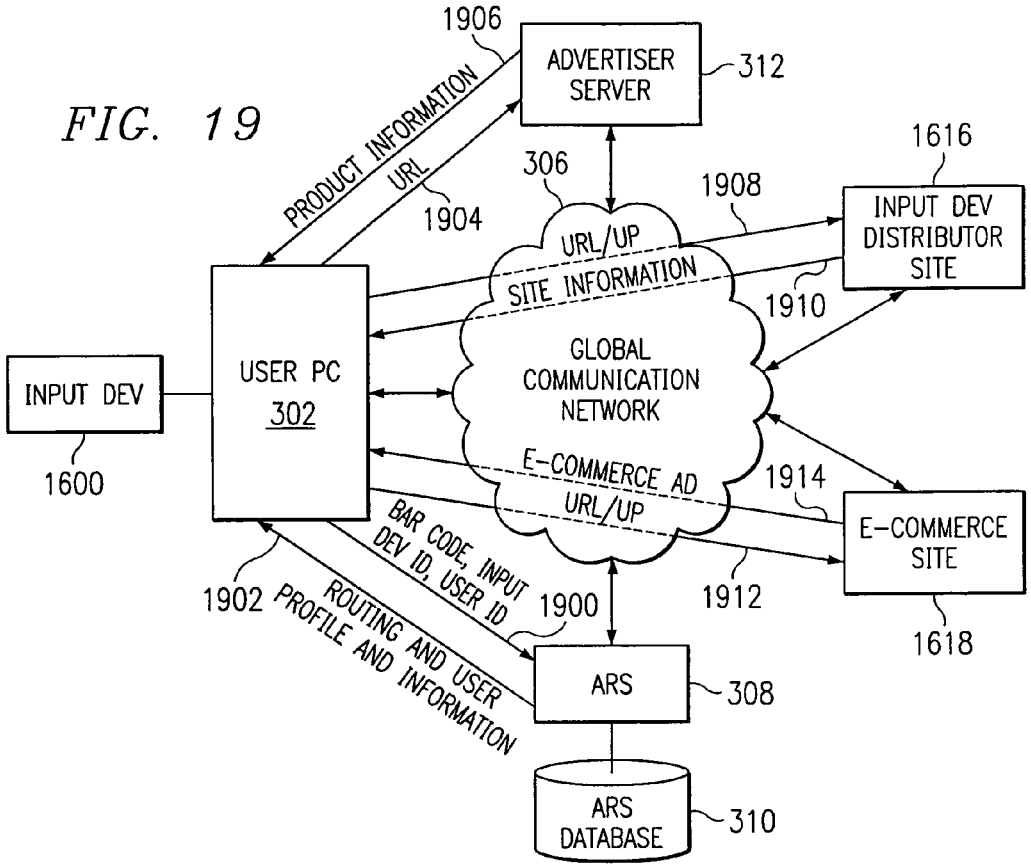

1906
ADVERTISER SERVER
312
PRODUCT INFORMATION
URL
1904
306
1908
1616
INPUT DEV DISTRIBUTOR SITE
URL/UP
SITE INFORMATION
1910
INPUT DEV
1600
USER PC
302
GLOBAL COMMUNICATION NETWORK
E-COMMERCE AD
URL/UP
1914
E-COMMERCE SITE
1618
BAR CODE, INPUT DEV ID, USER ID
1902
ROUTING AND USER PROFILE AND INFORMATION
1900
1912
ARS
308
ARS DATABASE
310

FIG. 20

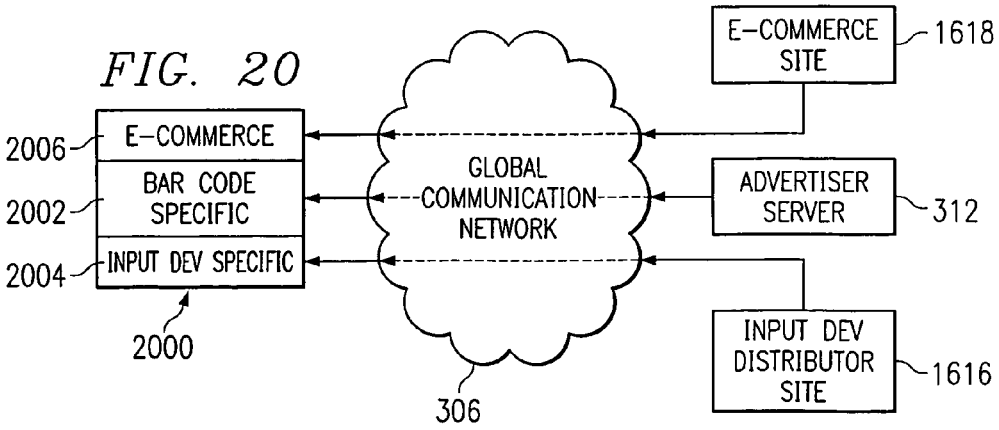

E-COMMERCE SITE
1618
2006
E-COMMERCE
2002
BAR CODE SPECIFIC
2004
INPUT DEV SPECIFIC
2000
GLOBAL COMMUNICATION NETWORK
306
ADVERTISER SERVER
312
INPUT DEV DISTRIBUTOR SITE
1616

FIG. 21

ARS DATABASE
2100

2102		2104		2106	2108	
PRODUCT		WAND		USER	E-COMMERCE	
BAR CODE	ROUTE	ID	DISTRIBUTOR	PROFILE	BAR CODE	INFORMATION

FIG. 22

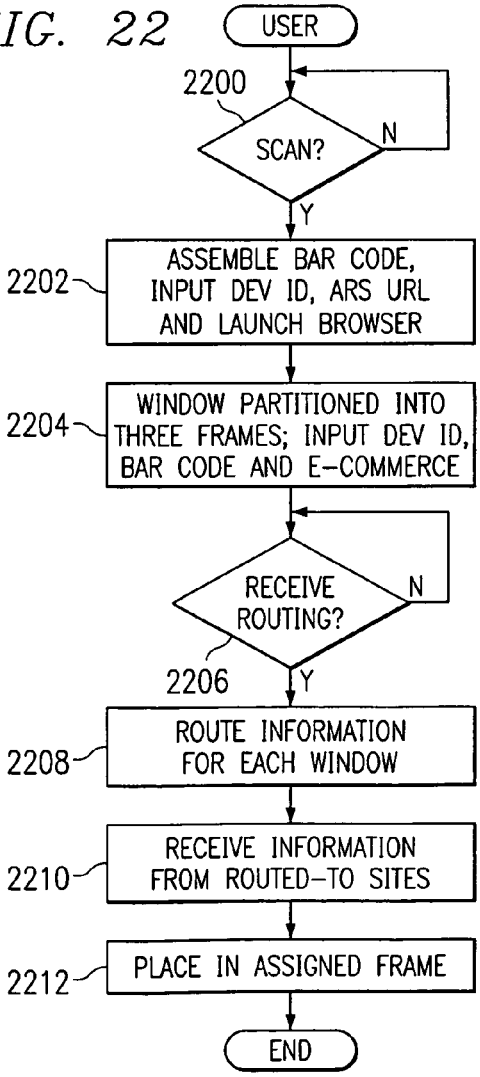


FIG. 23

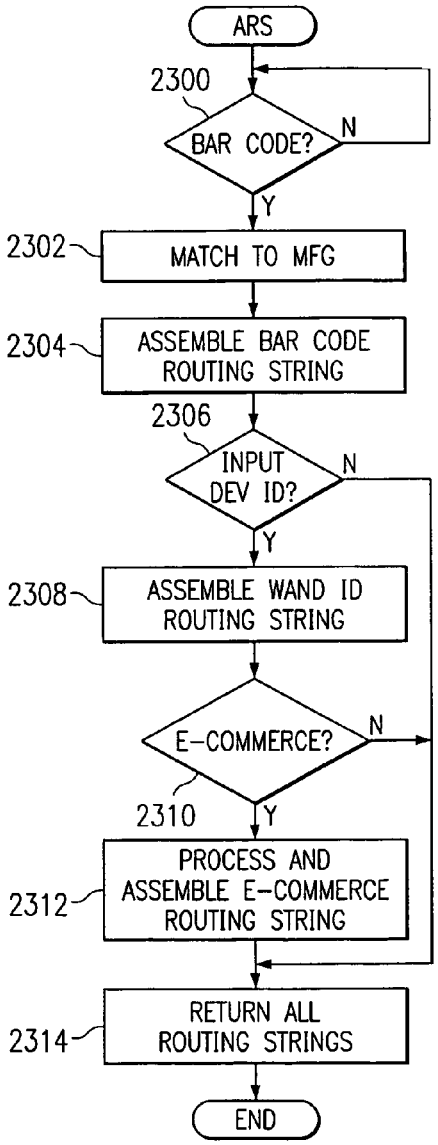
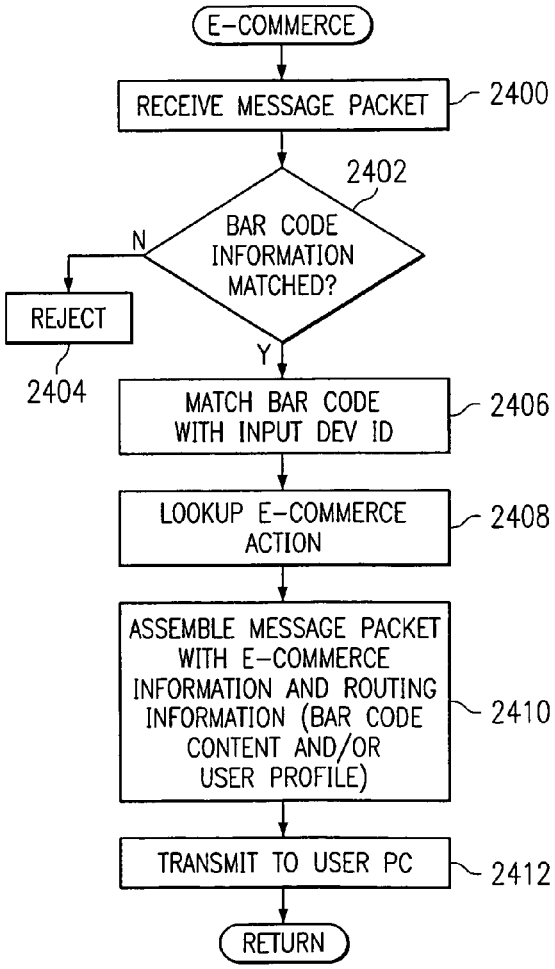

ARS
2300
BAR CODE?
N
Y
2302
MATCH TO MFG
2304
ASSEMBLE BAR CODE ROUTING STRING
2306
INPUT DEV ID?
N
Y
2308
ASSEMBLE WAND ID ROUTING STRING
E-COMMERCE?
N
2310
Y
2312
PROCESS AND ASSEMBLE E-COMMERCE ROUTING STRING
2314
RETURN ALL ROUTING STRINGS
END

FIG. 24


E-COMMERCE
RECEIVE MESSAGE PACKET
2400
2402
BAR CODE INFORMATION MATCHED?
N
REJECT
2404
Y
MATCH BAR CODE WITH INPUT DEV ID
2406
LOOKUP E-COMMERCE ACTION
2408
ASSEMBLE MESSAGE PACKET WITH E-COMMERCE INFORMATION AND ROUTING INFORMATION (BAR CODE CONTENT AND/OR USER PROFILE)
2410
TRANSMIT TO USER PC
2412
RETURN

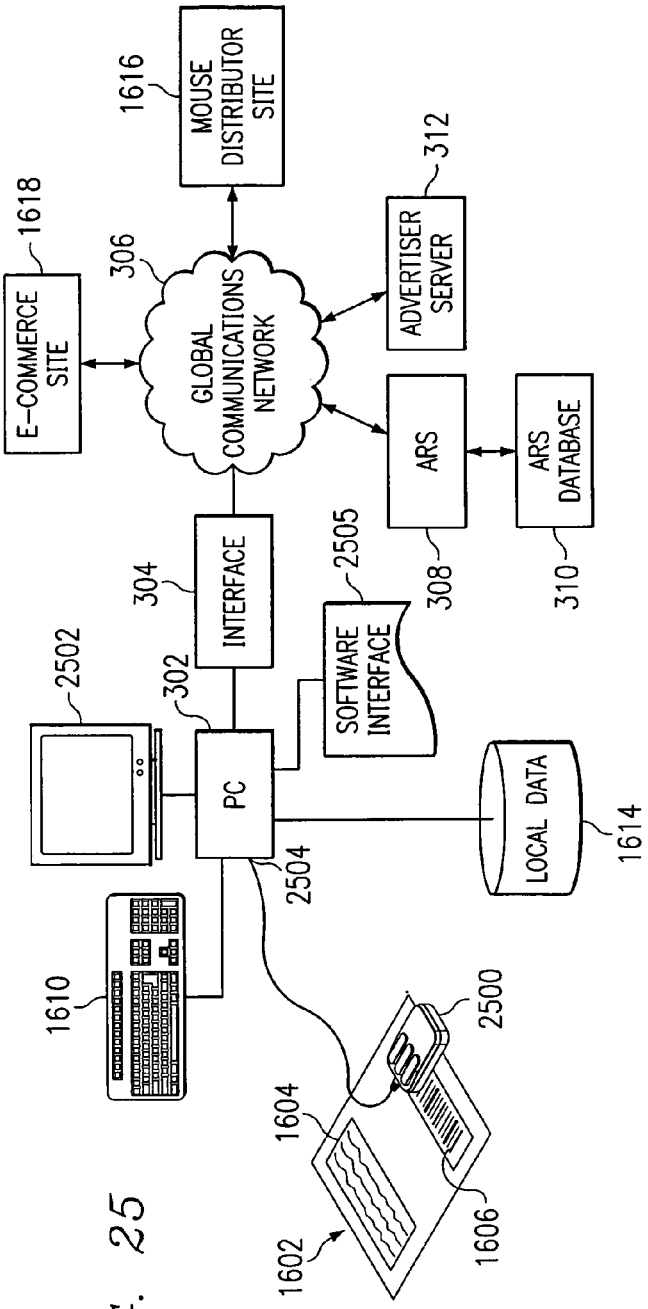

1616
MOUSE DISTRIBUTOR SITE
1618
E-COMMERCE SITE
306
GLOBAL COMMUNICATIONS NETWORK
312
ADVERTISER SERVER
304
INTERFACE
2505
SOFTWARE INTERFACE
308
ARS
310
ARS DATABASE
2502
302
PC
LOCAL DATA
1614
2504
1610
2500
1604
1602
1606

FIG. 25

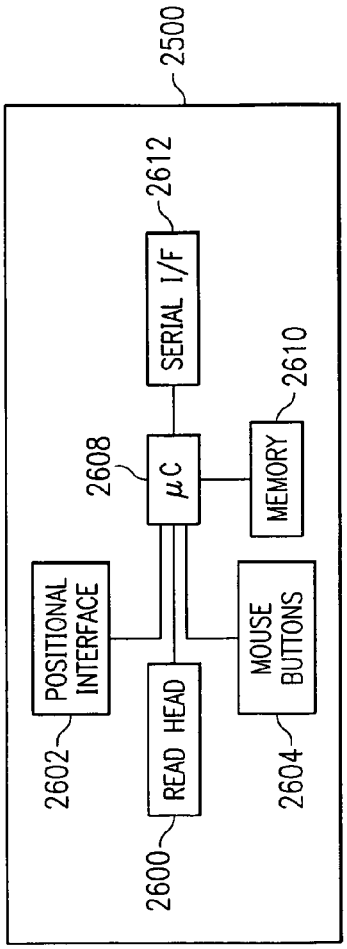

2500
2612
SERIAL I/F
2608
μC
2610
MEMORY
POSITIONAL INTERFACE
2602
READ HEAD
2600
MOUSE BUTTONS
2604

FIG. 26

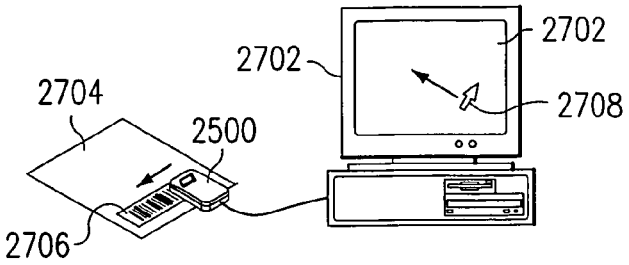


FIG. 27

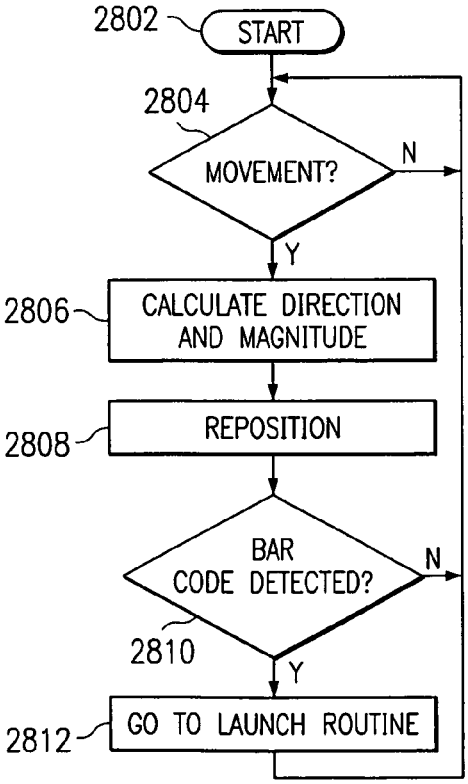


FIG. 28

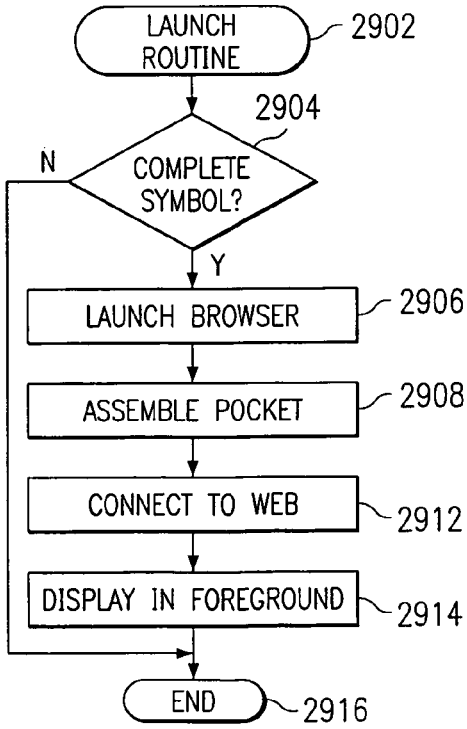
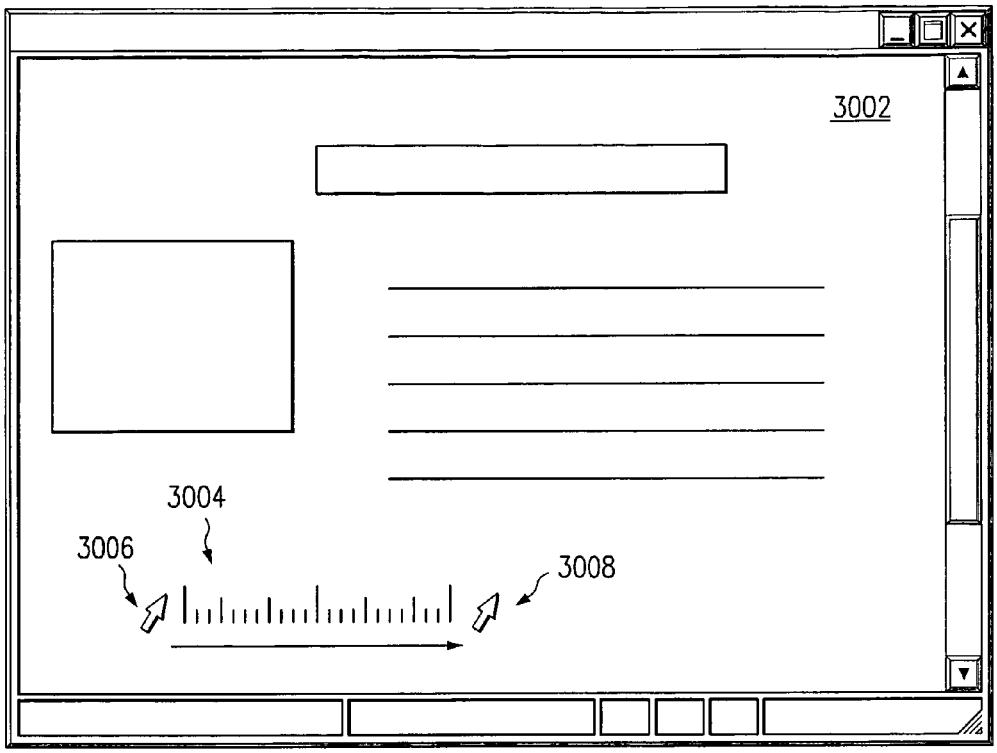


FIG. 29

FIG. 30


3002
3004
3006
3008

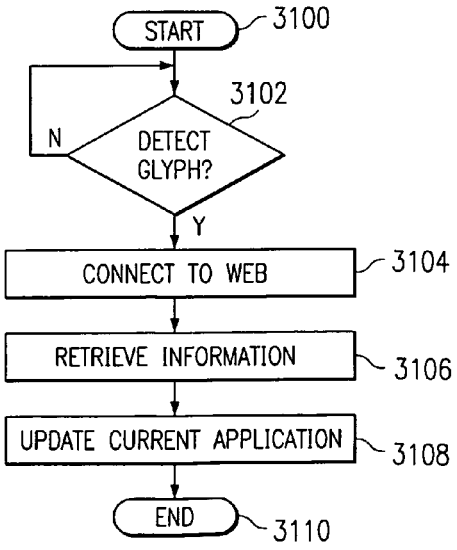

START
3100
3102
DETECT GLYPH?
N
Y
CONNECT TO WEB
3104
RETRIEVE INFORMATION
3106
UPDATE CURRENT APPLICATION
3108
END
3110

FIG. 31

INPUT DEVICE HAVING POSITIONAL AND SCANNING CAPABILITIES

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a Continuation of U.S. Pat. No. 6,868,433, issued on Mar. 15, 2005, which is a Continuation-in-Part of U.S. Pat. No. 6,745,234, entitled "METHOD AND APPARATUS FOR ACCESSING A REMOTE LOCATION BY SCANNING AN OPTICAL CODE" filed on Aug. 19, 1999, which is a Continuation-in-Part of the following two U.S. patent application Ser. No. 09/151,471 entitled "METHOD FOR INTERFACING SCANNED PRODUCT INFORMATION WITH A SOURCE FOR THE PRODUCT OVER A GLOBAL NETWORK" filed on Sep. 11, 1998, now abandoned and Ser. No. 09/151,530 entitled "METHOD FOR CONTROLLING A COMPUTER WITH AN AUDIO SIGNAL" filed on Sep. 11, 1998, and issued on Aug. 1, 2000 as U.S. Pat. No. 6,098,106; the present application being related to the following U.S. patent application Ser. No. 09/382,426 entitled "METHOD AND APPARATUS FOR COMPLETING, SECURING AND CONDUCTING AN E-COMMERCE TRANSACTION" filed Aug. 24, 1999; U.S. Pat. No. 6,836,799, entitled "METHOD AND APPARATUS FOR TRACKING USER PROFILE AND HABITS ON A GLOBAL NETWORK" filed Aug. 24, 1999; Ser. No. 09/382,425 entitled "METHOD AND APPARATUS FOR DIRECTING AN EXISTING PRODUCT CODE TO A REMOTE LOCATION" filed Aug. 24, 1999, now U.S. Pat. No. 7,228,282, issued on Jun. 5, 2007; Ser. No. 09/382,373 entitled "METHOD AND APPARATUS FOR LAUNCHING A WEB SITE WITH A NON-STANDARD CONTROL INPUT DEVICE" filed Aug. 24, 1999, now U.S. Pat. No. 7,117,240, issued on Oct. 3, 2006; Ser. No. 09/382,371 entitled "METHOD AND APPARATUS FOR LAUNCHING A WEB SITE IN RESPONSE TO SCANNING OF A PRODUCT CODE" filed Aug. 24, 1999; Ser. No. 09/382,422 entitled "UNIQUE ID FOR IDENTIFYING A USER AND FACILITATING AN E-COMMERCE TRANSACTION" filed Aug. 24, 1999, now abandoned; Ser. No. 09/382,377 entitled "METHOD AND APPARATUS FOR LINKING A WEB BROWSER TO A PROMOTIONAL OFFER OVER A GLOBAL NETWORK" filed Aug. 24, 1999; Ser. No. 09/382,375 entitled "METHOD AND APPARATUS FOR UTILIZING AN EXISTING PRODUCT CODE TO ISSUE A MATCH TO A PREDETERMINED LOCATION ON A GLOBAL NETWORK" filed Aug. 24, 1999, now U.S. Pat. No. 7,117,240, issued on Oct. 3, 2006; Ser. No. 09/379,699 entitled "NETWORK ROUTING UTILIZING A PRODUCT CODE" filed Aug. 24, 1999, now U.S. Pat. No. 7,321,941, issued on Jan. 22, 2008; U.S. Pat. No. 6,701,354 entitled "METHOD FOR INTERCONNECTING TWO LOCATIONS OVER A NETWORK IN RESPONSE TO USING A TOOL" filed Aug. 24, 1999; U.S. Pat. No. 6,845,388, "WEB SITE ACCESS BY MANUAL ENTRY OF A CHARACTER STRING INTO A SOFTWARE INTERFACE" filed Feb. 2, 2000; and U.S. Pat. No. 6,757,715 entitled "BAR CODE SCANNER AND SOFTWARE INTERFACE INTERLOCK" filed Feb. 2, 2000.

TECHNICAL FIELD OF THE INVENTION

This invention is related to computer input devices, and more particularly to a positional input device having scanning capabilities and operable with a software interface to automatically connect a first node on a network with a second node.

BACKGROUND OF THE INVENTION

With the growing numbers of computer users connecting to the "Internet," many companies are seeking the substantial commercial opportunities presented by such a large user base. For example, one technology which exists allows a television ("TV") signal to trigger a computer response in which the consumer will be guided to a personalized web page. The source of the triggering signal may be a TV, video tape recorder, or radio. For example, if a viewer is watching a TV program in which an advertiser offers viewer voting, the advertiser may transmit a unique signal within the television signal which controls a program known as a "browser" on the viewer's computer to automatically display the advertiser's web page. The viewer then simply makes a selection which is then transmitted back to the advertiser.

In order to provide the viewer with the capability of responding to a wide variety of companies using this technology, a database of company information and Uniform Resource Locator ("URL") codes is necessarily maintained in the viewer's computer, requiring continuous updates. URLs are short strings of data that identify resources on the Internet: documents, images, downloadable files, services, electronic mailboxes, and other resources. URLs make resources available under a variety of naming schemes and access methods such as HTTP, FTP, and Internet mail, addressable in the same simple way. URLs reduce the tedium of "login to this server, then issue this magic command . . . " down to a single click. The Internet uses URLs to specify the location of files on other servers. A URL includes the type of resource being accessed (e.g., Web, gopher, FTP), the address of the server, and the location of the file. The URL can point to any file on any networked computer. Current technology requires the viewer to perform periodic updates to obtain the most current URL database. This aspect of the current technology is cumbersome since the update process requires downloading information to the viewer's computer. Moreover, the likelihood for error in performing the update, and the necessity of redoing the update in the event of a later computer crash, further complicates the process. Additionally, current technologies are limited in the number of companies which may be stored in the database. This is a significant limitation since world-wide access presented by the Internet and the increasing number of companies connecting to perform on-line E-commerce necessitates a large database.

SUMMARY OF THE INVENTION

The invention disclosed and claimed herein comprises, in one aspect thereof, a method of obtaining product information of a product. A first computer of a user disposed on a network, connects to an input device to provide a user interface to the first computer. The input device can sense indicia of the product where the indicia contains a product ID. A second computer disposed on the network is accessed in response to the user sensing the indicia of the product with the input device. A lookup operation is performed at the second computer to match the product ID with routing information of a vendor server disposed on the network, the vendor server having the product information of the product. The routing information is returned from the second computer to the first computer in order to access the vendor server. The vendor

server is then accessed in accordance with the routing information to return the product information to the first computer for presentation to the user.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following description taken in conjunction with the accompanying Drawings in which:

FIG. **1** illustrates a block diagram of the preferred embodiment;

FIG. **2** illustrates the computer components employed in this embodiment;

FIG. **3** illustrates system interactions over a global network;

FIGS. **4***a*-**4***e* illustrate the various message packets transmitted between the source PC and network servers used in the preferred embodiment;

FIG. **5** is a flowchart depicting operation of the system according to the preferred embodiment;

FIG. **6** illustrates a flowchart of actions taken by the Advertiser Reference Server ("ARS") server;

FIG. **7** illustrates a flowchart of the interactive process between the source computer and ARS;

FIG. **8** illustrates a web browser page receiving the modified URL/advertiser product data according to the preferred embodiment;

FIG. **9** illustrates a simplified block diagram of the disclosed embodiment;

FIG. **10** illustrates a more detailed, simplified block diagram of the embodiment of FIG. **9**;

FIG. **11** illustrates a diagrammatic view of a method for performing the routing operation;

FIG. **12** illustrates a block diagram of an alternate embodiment utilizing an optical region in the video image for generating the routing information;

FIG. **13** illustrates a block diagram illustrating the generation of a profile with the disclosed embodiment;

FIG. **14** illustrates a flowchart for generating the profile and storing at the ARS;

FIG. **15** illustrates a flowchart for processing the profile information when information is routed to a user;

FIG. **16** illustrates a general block diagram of a disclosed embodiment;

FIG. **17** illustrates the conversion circuit of the wedge interface;

FIG. **18** illustrates a sample message packet transmitted from the user PC to the ARS;

FIG. **19** illustrates a more detailed block diagram of the routing of the message packets between the various nodes;

FIG. **20** illustrates a block diagram of a browser window, according to a disclosed embodiment;

FIG. **21** illustrates a diagrammatic view of information contained in the ARS database;

FIG. **22** illustrates a flowchart of the process of receiving information for the user's perspective;

FIG. **23** illustrates a flowchart according to the ARS; and

FIG. **24** illustrates a flowchart of the process performed at the E-commerce node;

FIG. **25** illustrates a general system block diagram of a multi-purpose input device used in conjunction with a software interface, according to a disclosed embodiment;

FIG. **26** illustrates a block diagram of the multi-purpose mouse having positional and indicia-reading capabilities;

FIG. **27** illustrates a diagrammatic view of the use of the disclosed mouse in conjunction with the display;

FIG. **28** illustrates a flowchart for operation of the mouse;

FIG. **29** illustrates a flowchart for the launching operation of the browser;

FIG. **30** illustrates an alternate embodiment of the present disclosure utilizing a mouse and a depiction of a display; and

FIG. **31** illustrates a flowchart for the embodiment of FIG. **30**.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIG. **1**, there is illustrated a block diagram of a system for controlling a personal computer ("PC") **112** via an audio tone transmitted over a wireless system utilizing a TV. In the embodiment illustrated in FIG. **1**, there is provided a transmission station **101** and a receive station **117** that are connected via a communication link **108**. The transmission station **101** is comprised of a television program source **104**, which is operable to generate a program in the form of a broadcast signal comprised of video and audio. This is transmitted via conventional techniques along channels in the appropriate frequencies. The program source is input to a mixing device **106**, which mixing device is operable to mix in an audio signal. This audio signal is derived from an audio source **100** which comprises a coded audio signal which is then modulated onto a carrier which is combined with the television program source **104**. This signal combining can be done at the audio level, or it can even be done at the RF level in the form of a different carrier. However, the preferred method is to merely sum the audio signal from the modulator **102** into the audio channel of the program that is generated by the television program source **104**. The output thereof is provided from the mixing device **106** in the form of broadcast signal to an antenna **107**, which transmits the information over the communication link **108** to an antenna **109** on the receive side.

On the receive side of the system, a conventional receiver **110**, such as a television is provided. This television provides a speaker output which provides the user with an audible signal. This is typically associated with the program. However, the receiver **110** in the disclosed embodiment, also provides an audio output jack, this being the type RCA jack. This jack is utilized to provide an audio output signal on a line **113** which is represented by an audio signal **111**. This line **113** provides all of the audio that is received over the communication link **108** to the PC **112** in the audio input port on the PC **112**. However, it should be understood that, although a direct connection is illustrated from the receiver **110** to the PC **112**, there actually could be a microphone pickup at the PC **112** which could pick the audio signal up. In the disclosed embodiment, the audio signal generated by the advertiser data input device **100** is audible to the human ear and, therefore, can be heard by the user. Therefore, no special filters are needed to provide this audio to the PC **112**.

The PC **112** is operable to run programs thereon which typically are stored in a program file area **116**. These programs can be any type of programs such as word processing programs, application programs, etc. In the disclosed embodiment, the program that is utilized in the system is what is referred to as a "browser." The PC **112** runs a browser program to facilitate the access of information on the network, for example, a global communication network known as the "Internet" or the World-Wide-Web ("Web"). The browser is a hypertext-linked application used for accessing information. Hypertext is a term used to describe a particular organization of information within a data processing system, and its presentation to a user. It exploits the computer's ability to link together information from a wide variety of sources to

provide the user with the ability to explore a particular topic. The traditional style of presentation used in books employs an organization of the information which is imposed upon it by limitations of the medium, namely fixed sized, sequential paper pages. Hypertext systems, however, use a large number of units of text or other types of data such as image information, graphical information, video information, or sound information, which can vary in size. A collection of such units of information is termed a hypertext document, or where the hypertext documents employ information other than text, hypermedia documents. Multimedia communications may use the Hypertext Transfer Protocol ("HTTP"), and files or formatted data may use the Hypertext Markup Language ("HTML"). This formatting language provides for a mingling of text, graphics, sound, video, and hypertext links by "tagging" a text document using HTML. Data encoded using HTML is often referred to as an "HTML document," an "HTML page," or a "home page." These documents and other Internet resources may be accessed across the network by means of a network addressing scheme which uses a locator referred to as a Uniform Resource Locator ("URL"), for example, "http://www.digital.com."

The Internet is one of the most utilized networks for interconnecting distributed computer systems and allows users of these computer systems to exchange data all over the world. Connected to the Internet are many private networks, for example, corporate or commercial networks. Standard protocols, such as the Transport Control Protocol ("TCP") and the Internet Protocol ("IP") provide a convenient method for communicating across these diverse networks. These protocols dictate how data are formatted and communicated. As a characteristic of the Internet, the protocols are layered in an IP stack. At higher levels of the IP stack, such as the application layer (where HTTP is employed), the user information is more readily visible, while at lower levels, such as the network level (where TCP/IP are used), the data can merely be observed as packets or a stream of rapidly moving digital signals. Superimposed on the Internet is a standard protocol interface for accessing Web resources, such as servers, files, Web pages, mail messages, and the like. One way that Web resources can be accessed is by browsers made by Netscape® and Microsoft Internet Explorer®.

Referring again now to FIG. **1**, the user can load this program with the appropriate keystrokes such that a browser window will be displayed on a display **118**. In one embodiment, the user can run the browser program on the PC **112** such that the browser window is displayed on the display **1118**. While watching a preferred program, the user can also view display **118**. When an audio signal is received by the receiver **110** and the encoded information is contained therein that was input thereto by the advertiser, the PC **112** will then perform a number of operations. The first operation, according to the disclosed embodiment, is to extract the audio information within the received audio signal in the form of digital data, and then transmit this digital data to a defined location on the global communication network via a modem connection **114**. This connection will be described hereinbelow. This information will be relayed to a proprietary location and the instructions sent back to the PC **112** as to the location of the advertiser associated with the code, and the PC **112** will then effect a communication link to that location such that the user can view on the display **118** information that the advertiser, by the fact of putting the tone onto the broadcast channel, desires the viewer to view. This information can be in the form of interactive programs, data files, etc. In one example, when an advertisement appears on the television, the tone can be generated and then additional data displayed on the display **118**. Additionally, a streaming video program could be played on the PC received over the network, which streaming video program is actually longer than the advertising segment on the broadcast. Another example would be a sports game that would broadcast the tone in order to allow a user access to information that is not available over the broadcast network, such as additional statistics associated with the sports program, etc.

By utilizing the system described herein with respect to the disclosed embodiment of FIG. **1**, an advertiser is allowed the ability to control a user's PC **112** through the use of tones embedded within a program audio signal. As will described hereinbelow, the disclosed embodiment utilizes particular routing information stored in the PC **112** which allows the encoded information in the received audio signal to route this information to a desired location on the network, and then allow other routing information to be returned to the PC **112** for control thereof to route the PC **112** to the appropriate location associated with that code.

Referring now to FIG. **2**, there is illustrated a computer **204**, similar to computer **112**, connected to display information on display **118**. The computer **204** comprises an internal audio or "sound" card **206** for receiving the transmitted audio signal through receive antenna **109** and receiver **110**. The sound card **206** typically contains analog-to-digital circuitry for converting the analog audio signal into a digital signal. The digital signal may then be more easily manipulated by software programs. The receiver **110** separates the audio signal from the video signal. A special trigger signal located within the transmitted advertiser audio signal triggers proprietary software running on the computer **204** which launches a communication application, in this particular embodiment, the web browser application located on the PC **204**. Coded advertiser information contained within the audio signal is then extracted and appended with the address of a proprietary server located on the communication network.

The remote server address is in the form of a URL. This appended data, in addition to other control codes, is inserted directly into the web browser application for automatic routing to the communication network. The web browser running on PC **204**, and communicating to the network with an internal modem **208**, in this embodiment, transmits the advertiser information to the remote server. The remote server cross-references the advertiser product information to the address of the advertiser server located on the network. The address of the advertiser server is routed back through the PC **204** web browser to the advertiser server. The advertiser product information is returned to PC **204** to be presented to the viewer on display **118**. In this particular embodiment, the particular advertiser product information displayed is contained within the advertiser's web page **212**. As mentioned above, the audio signal is audible to the human ear. Therefore the audio signal, as emitted from the TV speakers, may be input to the sound card **206** via a microphone. Furthermore, the audio signal need not be a real-time broadcast, but may be on video tapes, CDs, DVD, or other media which may be displayed at a later date. With the imminent implementation of high definition digital television, the audio signal output from the TV may also be digital. Therefore, direct input into a sound card for A/D purposes may not be necessary, but alternative interfacing techniques to accommodate digital-to-digital signal formats would apply.

Referring now to FIG. **3**, there is illustrated a source PC **302**, similar to PCs **204** and **112**, connected to a global communication network (GCN) **306** through an interface **304**. In this embodiment, the audio signal **111** is received by PC **302** through its sound card **206**. The audio signal **111** comprises a

trigger signal which triggers proprietary software into launching a web browser application residing on the PC **302**. The audio signal **111** also comprises advertiser product information which is extracted and appended with URL information of an Advertiser Reference Server ("ARS") **308**. The ARS **308** is a system disposed on the GCN **306** that is defined as the location to which data in the audio signal **111** is to be routed. As such, data in the audio signal **111** will always be routed to the ARS **308**, since a URL is unique on the GCN **306**. Connected to the ARS **308** is a database **310** of product codes and associated manufacturer URLs. The database **310** undergoes a continual update process which is transparent to the user. As companies sign-on, i.e., subscribe, to this technology, manufacturer and product information is added to the database **310** without interrupting operation of the source PC **302** with frequent updates. When the advertiser server address URL is obtained from the ARS database **310**, it and the request for the particular advertiser product information are automatically routed back through the web browser on PC **302**, over to the respective advertiser server for retrieval of the advertiser product information to the PC **302**. It should be noted that although the disclosed invention discusses a global communication network, the system is also applicable to LANs, WANs, and peer-to-peer network configurations. Additionally, the disclosed architecture is not limited to a single source PC **302**, but may comprise a plurality of source PCs, e.g., PC **300** and PC **303**. Moreover, a plurality of ARS **308** systems and advertiser servers **312** may be implemented, e.g., ARS **314**, and advertiser server A **316**, respectively.

The information transactions, in general, which occur between the networked systems of this embodiment, over the communication network, are the following. The web browser running on source PC **302** transmits a message packet to the ARS **308** over Path "A." The ARS **308** decodes the message packet and performs a cross-reference function with product information extracted from the received message packet to obtain the address of an advertiser server **312**. A new message packet is assembled comprising the advertiser server **312** address, and sent back to the source PC **302** over Path "B." A "handoff" operation is performed whereby the source PC **302** browser simply reroutes the information on to the advertiser server **312** over Path "C," with the appropriate source and destination address appended. The advertiser server **312** receives and decodes the message packet. The request-for-advertiser-product-information is extracted and the advertiser **312** retrieves the requested information from its database for transmission back to the source PC **302** over Path "D." The source PC **302** then processes the information, i.e., for display to the viewer. The optional Path "E" is discussed hereinbelow. It should be noted that the disclosed methods are not limited to only browser communication applications, but may accommodate, with sufficient modifications by one skilled in the art, other communication applications used to transmit information over the Internet or communication network.

Referring now to FIG. **4***a*, the message packet **400** sent from the source PC **302** to ARS **308** via Path "A" comprises several fields. One field comprises the URL of the ARS **308** which indicates where the message packet is to be sent. Another field comprises the advertiser product code or other information derived from the audio signal **111**, and any additional overhead information required for a given transaction. The product code provides a link to the address of the advertiser server **312**, located in the database **310**. Yet another field comprises the network address of the source PC **302**. In general, network transmissions are effected in packets of information, each packet providing a destination address, a source address, and data. These packets vary depending upon the network transmission protocol utilized for communication. Although the protocols utilized in the disclosed embodiment are of a conventional protocol suite commonly known as TCP/IP, it should be understood that any protocols providing the similar basic functions can be used, with the primary requirement that a browser can forward the routing information to the desired URL in response to keystrokes being input to a PC. Within the context of this disclosure, "message packet" shall refer to and comprise the destination URL, product information, and source address, even though more than a single packet must be transmitted to effect such a transmission.

Upon receipt of the message packet **400** from source PC **302**, ARS **308** processes the information in accordance with instructions embedded in the overhead information. The ARS **308** specifically will extract the product code information from the received packet **400** and, once extracted, will then decode this product code information. Once decoded, this information is then compared with data contained within the ARS advertiser database **310** to determine if there is a "hit." If there is no "hit" indicating a match, then information is returned to the browser indicating such. If there is a "hit," a packet **402** is assembled which comprises the address of the source PC **302**, and information instructing the source PC **302** as to how to access, directly in a "handoff" operation, another location on the network, that of an advertiser server **312**. This type of construction is relatively conventional with browsers such as Netscape® and Microsoft Internet Explorer® and, rather than displaying information from the ARS **308**, the source PC **302** can then access the advertiser server **312**. The ARS **308** transmits the packet **402** back to source PC **302** over Path "B." Referring now to FIG. **4***b*, the message packet **402** comprises the address of the source PC **302**, the URL of the advertiser server **312** embedded within instructional code, and the URL of the ARS **308**.

Upon receipt of the message packet **402** by the source PC **302**, the message packet **402** is disassembled to obtain pertinent routing information for assembly of a new message packet **404**. The web browser running on source PC **302** is now directed to obtain, over Path "C," the product information relevant to the particular advertiser server **312** location information embedded in message packet **404**. Referring now to FIG. **4***c*, the message packet **404** for this transaction comprises the URL of the advertiser server **312**, the request-for-product-information data, and the address of the source PC **302**.

Upon receipt of the message packet **404** from source PC **302**, advertiser server **312** disassembles the message packet **404** to obtain the request-for-product-information data. The advertiser server **312** then retrieves the particular product information from its database, and transmits it over Path "D" back to the source PC **302**. Referring now to FIG. **4***d*, the message packet **406** for this particular transaction comprises the address of the source PC **302**, the requested information, and the URL of the advertiser server **312**.

Optionally, the ARS **308** may make a direct request for product information over Path "E" to advertiser server **312**. In this mode, the ARS **308** sends information to the advertiser server **312** instructing it to contact the source PC **302**. This, however, is unconventional and requires more complex software control. The message packet **408** for this transaction is illustrated in FIG. **4***e*, which comprises the URL of the advertiser server **312**, the request-for-product-information data, and the address of the source PC **302**. Since product information is not being returned to the ARS **308**, but directly to the source PC **302**, the message packet **408** requires the return

address to be that of the source PC **302**. The product information is then passed directly to PC **302** over Path "D."

Referring now to FIG. **5**, the method for detecting and obtaining product information is as follows. In decision block **500**, a proprietary application running resident on a source computer PC **302** (similar to PC **204**) monitors the audio input for a special trigger signal. Upon detection of the trigger signal, data following the trigger signal is decoded for further processing, in function block **502**. In function block **504**, the data is buffered for further manipulation. In decision block **506**, a determination is made as to whether the data can be properly authenticated. If not, program flow continues through the "N" signal to function block **520** where the data is discarded. In function block **522**, the program then signals for a retransmission of the data. The system then waits for the next trigger signal, in decision block **500**. If properly authenticated in decision block **506**, program flow continues through the "Y" signal path where the data is then used to launch the web browser application, as indicated in function block **508**. In function block **510**, the web browser receives the URL data, which is then automatically routed through the computer modem **208** to the network interface **304** and ultimately to the network **306**. In function block **514**, the ARS **308** responds by returning the URL of advertiser server **312** to the PC **302**. In function block **516**, the web browser running on the source PC **302**, receives the advertiser URL information from the ARS **308**, and transmits the URL for the product file to the advertiser server **312**. In block **518**, the advertiser server **312** responds by sending the product information to the source PC **302** for processing.

The user may obtain the benefits of this architecture by simply downloading the proprietary software over the network. Other methods for obtaining the software are well-known; for example, by CD, diskette, or pre-loaded hard drives.

Referring now to FIG. **6**, there is illustrated a flowchart of the process the ARS **308** may undergo when receiving the message packet **400** from the source PC **302**. In decision block **600**, the ARS **308** checks for the receipt of the message packet **400**. If a message packet **400** is not received, program flow moves along the "N" path to continue waiting for the message. If the message packet **400** is received, program flow continues along path "Y" for message processing. Upon receipt of the message packet **400**, in function block **602**, the ARS **308** decodes the message packet **400**. The product code is then extracted independently in function block **604** in preparation for matching the product code with the appropriate advertiser server address located in the database **310**. In function block **606**, the product code is then used with a lookup table to retrieve the advertiser server **312** URL of the respective product information contained in the audio signal data. In function block **608**, the ARS **308** then assembles message packet **402** for transmission back to the source PC **302**. Function block **610** indicates the process of sending the message packet **402** back to the source PC **302** over Path "B."

Referring now to FIG. **7**, there is illustrated a flowchart of the interactive processes between the source PC **302** and the advertiser server **312**. In function block **700**, the source PC **302** receives the message packet **402** back from the ARS **308** and begins to decode the packet **402**. In function block **702**, the URL of the advertiser product information is extracted from the message packet **402** and saved for insertion into the message packet **404** to the advertiser server **312**. The message packet **404** is then assembled and sent by the source PC **302** over Path "C" to the advertiser server **312**, in function block **704**. While the source PC **302** waits, in function block **706**, the advertiser server **312** receives the message packet **404** from the source PC **302**, in function block **708**, and disassembles it. The product information location is then extracted from the message packet **404** in function block **710**. The particular product information is retrieved from the advertiser server **312** database for transmission back to the source PC **302**. In function block **712**, the product information is assembled into message packet **406** and then transmitted back to the source PC **302** over Path "D." Returning to the source PC **302** in function block **714**, the advertiser product information contained in the message packet **406** received from the advertiser server **312**, is then extracted and processed in function block **716**.

Referring now to FIG. **8**, after receipt of a trigger signal, a web browser application on a source PC **302** is automatically launched and computer display **800** presents a browser page **802**. Proprietary software running on the source PC **302** processes the audio signal data after being digitized through the sound card **206**. The software appropriately prepares the data for insertion directly into the web browser by extracting the product information code and appending keystroke data to this information. First, a URL page **804** is opened in response to a Ctrl-O command added by the proprietary software as the first character string. Opening URL page **804** automatically positions the cursor in a field **806** where additional keystroke data following the Ctrl-O command will be inserted. After URL page **804** is opened, the hypertext protocol preamble http:// is inserted into the field **806**. Next, URL information associated with the location of the ARS **308** is inserted into field **806**. Following the ARS **308** URL data are the characters /? to allow entry of variables immediately following the /? characters. In this embodiment, the variable following is the product information code received in the audio signal. The product code information also provides the cross-reference information for obtaining the advertiser URL from the ARS database **310**. Next, a carriage return is added to send the URL/product data and close the window **804**. After the message packet **400** is transmitted to the ARS **308** from the source PC **302**, transactions from the ARS **308**, to the source PC **302**, to the advertiser server **312**, and back to the source PC **302**, occur quickly and are transparent to the viewer. At this point, the next information the viewer sees is the product information which was received from the advertiser server **312**.

Referring now to FIG. **9**, there is illustrated a block diagram of a more simplified embodiment. In this embodiment, a video source **902** is provided which is operable to provide an audio output on an audio cable **901** which provides routing information referred to by reference numeral **904**. The routing information **904** is basically information contained within the audio signal. This is an encoded or embedded signal. The important aspect of the routing information **904** is that it is automatically output in realtime as a function of the broadcast of the video program received over the video source **902**. Therefore, whenever the program is being broadcast in real-time to the user **908**, the routing information **904** will be output whenever the producer of the video desires it to be produced. It should be understood that the box **902** representing the video source could be any type of media that will result in the routing information being output. This could be a cassette player, a DVD player, an audio cassette, a CD ROM or any such media. It is only important that this is a program that the producer develops which the user **908** watches in a continuous or a streaming manner. Embedded within that program, at a desired point selected by the producer, the routing information **904** is output.

The audio information is then routed to a PC **906**, which is similar to the PC **112** in FIG. **1**. A user **908** is interfaced with the PC to receive information thereof, the PC **906** having

associated therewith a display (not shown). The PC **906** is interfaced with a network **910**, similar to the network **306** in FIG. **3**. This network **910** has multiple nodes thereon, one of which is the PC **906**, and another of which is represented by a network node **912** which represents remote information. The object of the present embodiment is to access remote information for display to the user **908** by the act of transmitting from the video program in block **902** the routing information **904**. This routing information **904** is utilized to allow the PC **906** which has a network "browser" running thereon to "fetch" the remote information at the node **912** over the network **910** for display to the user **908**. This routing information **904** is in the form of an embedded code within the audio signal, as was described hereinabove.

Referring now to FIG. **10**, there is illustrated a more detailed block diagram of the embodiment of FIG. **9**. In this embodiment, the PC **906** is split up into a couple of nodes, a first PC **1002** and a second PC **1004**. The PC **1002** resides at the node associated with the user **908**, and the PC **1004** resides at another node. The PC **1004** represents the ARS **308** of FIG. **3**. The PC **1004** has a database **1006** associated therewith, which is basically the advertiser database **310**. Therefore, there are three nodes on the network **910** necessary to implement the disclosed embodiment, the PC **1002**, the PC **1004** and the remote information node **912**. The routing information **904** is utilized by the PC **1002** for routing to the PC **1004** to determine the location of the remote information node **912** on the network **910**. This is returned to the PC **1002** and a connection made directly with the remote information node **912** and the information retrieved therefrom to the user **908**. The routing information **904** basically constitutes primary routing information.

Referring now to FIG. **11**, there is illustrated a diagrammatic view of how the network packet is formed for sending the primary routing information to the PC **1004**. In general, the primary routing information occupies a single field which primary routing information is then assembled into a data packet with the secondary routing information for transfer to the network **910**. This is described hereinabove in detail.

Referring now to FIG. **12**, there is illustrated an alternate embodiment to that of FIG. **9**. In this embodiment, the video source **902** has associated therewith an optical region **1202**, which optical region **1202** has disposed therein an embedded video code. This embedded video code could be relatively complex or as simple as a grid of dark and white regions, each region in the grid able to have a dark color for a logic "1" or a white region for a logic "0." This will allow a digital value to be disposed within the optical region **1202**. A sensor **1204** can then be provided for sensing this video code. In the example above, this would merely require an array of optical detectors, one for each region in the grid to determine whether this is a logic "1" or a logic "0" state. One of the sensed video is then output to the PC **906** for processing thereof to determine the information contained therein, which information contained therein constitutes the primary routing information **904**. Thereafter, it is processed as described hereinabove with reference to FIG. **9**.

Referring now to FIG. **13**, there is illustrated a block diagram for an embodiment wherein a user's profile can be forwarded to the original subscriber or manufacturer. The PC **906** has associated therewith a profile database **1302**, which profile database **1302** is operable to store a profile of the user **908**. This profile is created when the program, after initial installation, requests profile information to be input in order to activate the program. In addition to the profile, there is also a unique ID that is provided to the user **908** in association with the browser program that runs on the PC **906**. This is stored in a storage location represented by a block **1304**. This ID **1304** is accessible by a remote location as a "cookie" which is information that is stored in the PC **906** in an accessible location, which accessible location is actually accessible by the remote program running on a remote node.

The ARS **308**, which basically constitutes the PC **1004** of FIG. **10**, is operable to have associated therewith a profile database **1308**, which profile database **1308** is operable to store profiles for all of the users. The profile database **1308** is a combination of the stored in profile database **1302** for all of the PCs **906** that are attachable to the system. This is to be distinguished from information stored in the database **310** of the ARS **308**, the advertiser's database, which contains intermediate destination tables. When the routing information in the primary routing information **904** is forwarded to the ARS **308** and extracted from the original data packet, the lookup procedure described hereinabove can then be performed to determine where this information is to be routed. The profile database **1302** is then utilized for each transaction, wherein each transaction in the form of the routing information received from the primary routing information **904** is compared to the destination tables of database **310** to determine what manufacturer is associated therewith.

The associated ID **1304** that is transmitted along with the routing information in primary routing information **904** is then compared with the profile database **1308** to determine if a profile associated therewith is available. This information is stored in a transaction database **1310** such that, at a later time, for each routing code received in the form of the information in primary routing information **904**, there will associated therewith the IDs **1304** of each of the PCs **906**. The associated profiles in database **1308**, which are stored in association with IDs **1304**, can then be assembled and transmitted to a subscriber as referenced by a subscriber node **1312** on the network **910**. The ARS **308** can do this in two modes, a realtime mode or a non-realtime mode. In a realtime mode, each time a PC **906** accesses the advertiser database **310**, that user's profile information is uploaded to the subscriber node **1312**. At the same time, billing information is generated for that subscriber **1312** which is stored in a billing database **1316**. Therefore, the ARS **308** has the ability to inform the subscriber **1312** of each transaction, bill for those transactions, and also provide to the subscriber **1312** profile information regarding who is accessing the particular product advertisement having associated therewith the routing information field **904** for a particular routing code as described hereinabove. This information, once assembled, can then be transmitted to the subscriber **1312** and also be reflected in billing information and stored in the billing information database **1316**.

Referring now to FIG. **14**, there is illustrated a flowchart depicting the operation for storing the profile for the user. The program is initiated in a block **1402** and then proceeds to a function block **1404**, wherein the system will prompt for the profile upon initiation of the system. This initiation is a function that is set to activate whenever the user initially loads the software that he or she is provided. The purpose for this is to create, in addition to the setup information, a user profile. Once the user is prompted for this, then the program will flow to a decision block **1406** to determine whether the user provides basic or detailed information. This is selectable by the user. If selecting basic, the program will flow to a function block **1408** wherein the user will enter basic information such as name and serial number and possibly an address. However, to provide some incentive to the user to enter more information, the original prompt in function block **1404** would have offers for such things as coupons, discounts, etc., if the user

will enter additional information. If the user selects this option, the program flows from the decision block **1406** to a function block **1410**. In the function block **1410**, the user is prompted to enter specific information such as job, income level, general family history, demographic information and more. There can be any amount of information collected in this particular function block.

Once all of the information is collected, in either the basic mode or the more specific mode, the program will then flow to a function block **1412** where this information is stored locally. The program then flows to a decision block **1414** to then go on-line to the host or the ARS **308**. In general, the user is prompted to determine whether he or she wants to send this information to the host at the present time or to send it later. If he or she selects the "later" option, the program will flow to a function block **1415** to prompt the user at a later time to send the information. In the disclosed embodiment, the user will not be able to utilize the software until the profile information is sent to the host. Therefore, the user may have to activate this at a later time in order to connect with the host.

If the user has selected the option to upload the profile information to the host, the program will flow to the function block **1416** to initiate the connect process and then to a decision block **1418** to determine if the connection has been made. If not, the program will flow along a "N" path to a time to decision block **1420** which will timeout to an error block **1422** or back to the input of the connect decision block **1418**. The program, once connected, will then flow along a "Y" path from decision block **1418** to a function block **1428** to send the profile information with the ID of the computer or user to the host. The ID is basically, as described hereinabove, a "cookie" in the computer which is accessed by the program when transmitting to the host. The program will then flow to a function block **1430** to activate the program such that it, at later time, can operate without requiring all of the setup information. In general, all of the operation of this flowchart is performed with a "wizard" which steps the user through the setup process. Once complete, the program will flow to a Done block **1432**.

Referring now to FIG. **15**, there is illustrated a flowchart depicting the operation of the host when receiving a transaction. The program is initiated at a Start block **1502** and then proceeds to decision block **1504**, wherein it is determined whether the system has received a routing request, i.e., the routing information **904** in the form of a tone, etc., embedded in the audio signal, as described hereinabove with respect to FIG. **9**. The program will loop back around to the input of decision block **1504** until the routing request has been received. At this time, the program will flow along the "Y" path to a function block **1506** to receive the primary routing information and the user ID. Essentially, this primary routing information is extracted from the audio tone, in addition to the user ID. The program then flows to a function block **1508** to look up the manufacturer URL that corresponds to the received primary routing information and then return the necessary command information to the originating PC **108** in order to allow that PC **108** to connect to the destination associated with the primary routing information. Thereafter, the program will flow to a function block **1510** to update the transaction database **1310** for the current transaction. In general, the routing information **904** will be stored as a single field with the associated IDs. The profile database **1308**, as described hereinabove, has associated therewith detailed profiles of each user on the system that has activated their software in association with their ID. Since the ID was sent in association with the routing information, what is stored in the transaction database **1310** is the routing code, in association with all of the IDs transmitted to the system in association with that particular routing code. Once this transaction database **1310** has been updated, as described hereinabove, the transactions can be transferred back to the subscriber at node **312** with the detailed profile information from the profile database **1308**.

The profile information can be transmitted back to the subscriber or manufacturer at the node **312** in realtime or non-realtime. A decision block **1512** is provided for this, which determines if the delivery is realtime. If realtime, the program will flow along a "Y" path to a function block **1514** wherein the information will be immediately forwarded to the manufacturer or subscriber. The program will then flow to a function block **1516** wherein the billing for that particular manufacturer or subscriber will be updated in the billing database **1316**. The program will then flow into an End block **1518**. If it was non-realtime, the program moves along the "N" path to a function block **1520** wherein it is set for a later delivery and it is accrued in the transaction database **1310**. In any event, the transaction database **1310** will accrue all information associated with a particular routing code.

With a realtime transaction, it is possible for a manufacturer to place an advertisement in a magazine or to place a product on a shelf at a particular time. The manufacturer can thereafter monitor the times when either the advertisements or the products are purchased. Of course, they must be scanned into a computer which will provide some delay. However, the manufacturer can gain a very current view of how a product is moving. For example, if a cola manufacturer were to provide a promotional advertisement on, for example, television, indicating that a new cola was going to be placed on the shelf and that the first 1000 purchasers, for example, scanning their code into the network would receive some benefit, such as a chance to win a trip to some famous resort in Florida or some other incentive, the manufacturer would have a very good idea as to how well the advertisement was received. Further, the advertiser would know where the receptive markets were. If this advertiser, for example, had placed the television advertisement in ten cities and received overwhelming response from one city, but very poor response from another city, he would then have some inclination to believe that either the one poor-response city was not a good market or that the advertising medium he had chosen was very poor. Since the advertiser can obtain a relatively instant response and also content with that response as to the demographics of the responder, very important information can be obtained in a relatively short time.

It should be noted that the disclosed embodiment is not limited to a single source PC **302**, but may encompass a large number of source computers connected over a global communication network. Additionally, the embodiment is not limited to a single ARS **308** or a single advertiser server **312**, but may include a plurality of ARS and advertiser systems, indicated by the addition of ARS **314** and advertiser server A **316**, respectively. It should also be noted that this embodiment is not limited only to global communication networks, but also may be used with LAN, WAN, and peer-to-peer configurations.

It should also be noted that the disclosed embodiment is not limited to a personal computer, but is also applicable to, for example, a Network Computer ("NetPC"), a scaled-down version of the PC, or any system which accommodates user interaction and interfaces to information resources.

One typical application of the above noted technique is for providing a triggering event during a program, such as a sport event. In a first example, this may be generated by an advertiser. One could imagine that, due to the cost of advertise-

ments in a high profile sports program, there is a desire to utilize this time wisely. If, for example, an advertiser contracted for 15 seconds worth of advertising time, they could insert within their program a tone containing the routing information. This routing information can then be output to the user's PC **302** which will cause the user's PC **302** to, via the network, obtain information from a remote location typically controlled by the advertiser. This could be in the form of an advertisement of a length longer than that contracted for. Further, this could be an interactive type of advertisement. An important aspect to the type of interaction between the actual broadcast program with the embedded routing information and the manufacturer's site is the fact that there is provided information as to the user's PC **302** and a profile of the user themselves. Therefore, an advertiser can actually gain real-time information as to the number of individuals that are watching their particular advertisement and also information as to the background of those individuals, profile information, etc. This can be a very valuable asset to an advertiser.

In another example, the producer of the program, whether it be an on-air program, a program embedded in a video tape, CD-ROM, DVD, or a cassette, can allow the user to automatically access additional information that is not displayed on the screen. For example, in a sporting event, various statistics can be provided to the user from a remote location, merely by the viewer watching the program. When these statistics are provided, the advertiser can be provided with profile information and background information regarding the user. This can be important when, for example, the user may record a sports program. If the manufacturer sees that this program routing code is being output from some device at a time later than the actual broadcast itself, this allows the advertisers to actually see that their program is still being used and also what type of individual is using it. Alternatively, the broadcaster could determine the same and actually bill the advertiser an additional sum for a later broadcast. This is all due to the fact that the routing information automatically, through a PC and a network, will provide an indication to the advertiser the time at which the actual information was broadcast.

The different type of medium that can be utilized with the above embodiment are such things as advertisements, which are discussed hereinabove, contests, games, news programs, education, coupon promotional programs, demonstration media (demos), and photographs, all of which can be broadcast on a private site or a public site. This all will provide the ability to allow realtime interface with the network and the remote location for obtaining the routed information and also allow for realtime billing and accounting.

Referring now to FIG. **16**, there is illustrated a general block diagram of a disclosed embodiment. A bar code scanning device **1600** referred to as an "input device" or "keystroke automator" is provided by an input device distributor to customers and is associated with that distributor via an input device ID stored therein. The input device **1600** is either sold or freely distributed to customers for use with their personal computing systems. Since more and more products are being sold using bar codes, it can be appreciated that a user having the input device **1600** can scan bar codes of a multitude of products in order to obtain more information. Information about these products can be made immediately available to the user from the manufacturer for presentation by the user's computer **302**. Beyond simply displaying information about the product in which the user is interested, the input device distributor may include additional advertising information for display to the user such as information about other promotions or products provided or sold by the input device distributor. Similarly, advertisers may provide catalogs of advertisements or information in newspapers or periodicals where the user simply scans the bar code associated with the advertisement using the input device **1600** to obtain further information. There is provided a paper source **1602** having contained thereon an advertisement **1604** and an associated bar code **1606**. (Note that the disclosed concept is not limited to scanning of bar codes **1606** from paper sources **1602**, but is also operable to scan a bar code **1606** on the product itself. Also, the input device **1600** can be any type of device that will scan any type of image having information encoded therein.)

After obtaining the input device **1600** from the input device distributor, the user connects the input device **1600** to their PC **302**. During a scanning operation, input device **1600** reads bar code data **1606** and the input device ID into a "wedge" interface **1608** for conversion into keyboard data, which keyboard data is passed therefrom into the keyboard input port of PC **302**. The importance of the input device ID will be discussed in more detail hereinbelow.

The wedge interface **1608** is simply an interface box containing circuitry that accommodates inputs from both the scanning input device **1600** and a computer keyboard **1610**. This merely allows the information scanned by the input device **1600** to be input into the PC **302**. In the disclosed embodiment, the wedge interface **1608** will convert any information. The data output from the input device **1600** is passed into the wedge interface **1608** for conversion into keyboard data which is readily recognizable by the PC **302**. Therefore, the input device **1600** is not required to be connected to a separate port on the PC **302**. This data is recognized as a sequence of keystrokes. However, the output of the input device **1600** can be input in any manner compatible with the PC **302**. When not receiving scanner data, the wedge interface **1608** simply acts as a pass-through device for keyboard data from the keyboard **1610**. In any case, the information is ultimately processed by a processor in the PC **302** and can be presented to the user on a display **1612**. The wedge interface **1608** is operable to provide a decoding function for the bar code **1606** and conversion thereof to keystroke input data.

In operation, the product code of a product is provided in the form of a bar code **1606**. This bar code **1606** is the "link" to a product. The disclosed embodiment is operable to connect that product information contained in the bar code **1606** with a web page of the manufacturer of that product by utilizing the bar code **1606** as the product "identifier." The program operating on the PC **302** provides routing information to the ARS **308** after launching the browser on the PC **302** and connecting to the ARS **308** over the GCN **306**, which ARS **308** then performs the necessary steps to cause the browser to connect to the manufacturer web site, while also providing for an accounting step, as will be described in more detail hereinbelow.

The bar code **1606** by itself is incompatible with any kind of network for the purposes of communication therewith. It is primarily provided for a retail-type setting. Therefore, the information contained in the bar code **1606**, by itself, does not allow for anything other than identification of a product, assuming that one has a database **1614** containing information as to a correlation between the product and the bar code **1606**.

The wedge interface **1608** is operable to decode the bar code **1606** to extract the encoded information therein, and append to that decoded bar code information relating to an ID for the input device **1600**. This information is then forwarded to the ARS **308** by the resident program in the PC **302**. This is facilitated by intermediate routing information stored in the program indicating to which node on the GCN **306** the scanned bar code information is to be sent, i.e., to the ARS

308. It is important to note that the information in the bar code 1606 must be converted from its optical image to numerical values which are then ultimately input to the keyboard input port of PC 302 and converted into data compatible with communication software residing on the PC 302 (in this case, HTML language for insertion into a browser program). When the scanned information is input to the PC 302, the resident program launches the browser program and then assembles a communication packet comprised of the URL of the ARS 308, the input device ID and the user ID. If another type of communications program were utilized, then it would have to be converted into language compatible with that program. Of course, a user could actually key in the information on the bar code 102 and then append the appropriate intermediate routing information thereafter. As will be described hereinbelow, the intermediate routing information appended thereto is the URL of the ARS 308 disposed on the GCN 306.

As part of the configuration for using the input device 1600, the PC 302 hosts input device software which is operable to interpret data transmitted from the input device 1600, and to create a message packet having the scanned product information and input device ID, routing information, and a user ID which identifies the user location of the input device 1600. The input device software loads at boot-up of the PC 302 and runs in the background. In response to receiving a scanned bar code 1606, the wedge interface 1608 outputs a keystroke code (e.g., ALT-F10) to bring the input device program into the foreground for interaction by the operating system. The input device program then inserts the necessary information into the browser program. The message packet is then transmitted to interface 304 across the global communication network 306 to the ARS 308. The ARS 308 interrogates the message packet and performs a lookup function using the ARS database 310. If a match is found between particular parameters of the message packet, a return message packet is sent back to the PC 302 for processing.

The input device program running on PC 302 functions to partition the browser window displayed to the user into several individual areas. This is for the purpose of preparing to present to the user selected information in each of the individual areas (also called "framing"). The selected information comprises the product information which the user requested by scanning the bar code 1606 using the input device 1600, information about the input device distributor which establishes the identity of the company associated with that particular input device 1600, and at least one or more other frames which may be advertisements related to other products that the input device distributor sells. Note that the advertisements displayed by the input device distributor may be related to the product of interest or totally unrelated. For example, if a user scans the bar code 1606 of a soda from Company A, the input device distributor may generate an advertisement of a new soft drink being marketed by Company A, that it sells. On the other hand, the input device distributor may also structure the display of information to the user such that a user requesting product information of a Product X may get the requested information of Product X along with advertisements for a competing item Product Y. Essentially, the input device distributor is free to generate any advertisement to the user in response to the user requesting product information.

The return message packet transmitted from the ARS 308 to the PC 302 is then transmitted back across the GCN 306 to the advertiser server 312. The advertiser server 312 restructures the message packet and appends the particular product information for transmission back to the PC 302. Upon receiving the particular advertiser information from advertiser server 312, the PC 302 then retransmits a message to the input device distributor site 1616 and E-commerce site 1618 to obtain the information that needs to be framed in the browser window displayed to the user.

Therefore, the input device 1600 is associated with the input device distributor by way of an input device ID such that scanning a product bar code 1606 in order to obtain information about that particular product generates one or more responses from one or more remote sites disposed on the GCN 306. Stored in the input device 1600 is the input device ID which establishes its relationship to the input device distributor. Proprietary input device software running on the PC 302 operates to decode scanned bar code information and the input device ID received from the input device 1600 and wedge interface 1608, and also provides a unique user ID for establishing the location of the user of the input device 1600. The input device software also assembles message packets and works in conjunction with the on-board communication software (e.g., a browser) to automatically route the message packets across the GCN 306 such that the one or more remote sites disposed on the GCN 306 return information to be framed for presentation to the user.

Referring now to FIG. 17, there is illustrated a conversion circuit of the wedge interface. A microcontroller 1700 provides conversion of the data from the input device 1600 and controls interfacing of the keyboard 1610 and input device 1600 with the PC 302. The microcontroller 1700 has contained therein a memory 1702 or it can have external memory. There are provided a plurality of input device interfaces 1704 to the input device 1600, a plurality of PC interfaces 1706 to the PC 302, and plurality of keyboard interfaces 1708 to the keyboard 106. In general, the input device interfaces 1704 comprise a serial data line, a ground line, and a power line. Similarly, the keyboard interfaces 1708 comprise a serial data line, a ground line, a clock line, and a power line. The PC 302 provides a clock line, a power line, a serial data, and a ground line for input to the microcontroller 1700. The microcontroller 1700 is operable to receive signals from the keyboard 1610 and transfer the signals to the PC 302 as keyboard signals. Operation with the keyboard 1610 is essentially a "pass-through" procedure. Data output from the keyboard 1610 is already in keyboard format, and therefore requires no conversion by the wedge interface 1608. With respect to the input device 1600, the serial data is not compatible with a keyboard 1610 and, therefore, it must be converted into a keyboard format in order to allow input thereof to the keyboard input of the PC 302.

The microcontroller 1700 performs this function after decoding this bar code information, and conversion of this bar code information into an appropriate stream of data which is comprised of the bar code information and the appended URL. This appended URL will be pre-stored in the memory 1702 and is programmable at the time of manufacture. It is noted that the memory 1702 is illustrated as being contained within the microcontroller 1702 to provide a single chip solution. However, this could be external memory that is accessible by the microcontroller 1702. Therefore, the microcontroller 1700 provides an interface between the input device 1600 and the keyboard 1610 to the PC 302 which allows the input device 1600 to receive coded information and convert it to keyboard strokes or, alternatively, to merely pass-through the keystrokes from the keyboard 1610. Therefore, the user need not install any type of plug-in circuit board into the motherboard of the PC 302 in order to provide an interface to the input device 1600; rather, the user need only utilize the already available keyboard port in order to input the appropriate data into the system.

In this particular disclosed embodiment, the microcontroller **1700** comprises a PIC16C73 microcontroller by Microchip Technologies™. The PIC16C73 device is a low cost CMOS 8-bit microcontroller with an integrated analog-to-digital converter. The PIC16C73 device, as illustrated in the disclosed embodiment, has 192 bytes of RAM and 4 k×4 of EPROM memory. The microcontroller **1700** can accommodate asynchronous or synchronous inputs from input devices connected to it. In this disclosed embodiment, communication to the keyboard **1610** is synchronous while it is asynchronous when communicating with input device **1600**.

It should be noted that, although in this particular embodiment bar code information of the bar code **1606** is input into the keyboard input port of the PC **302**, disclosed methods may also be advantageously utilized with high speed port architectures such as Universal Serial Bus ("USB") and IEEE 1394.

Bar codes are structured to be read in either direction. Timing considerations need to be addressed because of the variety of individuals scanning the bar code introduce a wide variety of scan rates. Bar codes use bars of varying widths. The presence of a black bar generates a positive pulse, and the absence of a black bar generates no pulse. Each character of a conventional bar code has associated therewith seven pulses or bars. Depending on the width of the bars, the time between pulses varies. In this disclosed embodiment, the interface circuitry **1608** performs a "running" calculation of the scan time based upon the rising edge of the pulses commencing with the leader or header information. The minimum and maximum scans times are calculated continuously in software with the interface **1608** during the scanning process to ensure a successful scan by the user.

Referring now to FIG. **18**, there is illustrated a sample message packet transmitted from the user's PC **302** to the ARS **308**. The message packet **1800** comprises a number of bits of information including the bar code information **1802** obtained from the user scanning the bar code **1606** with the input device **1600**; the input device ID **1804** which is embedded in a memory in the input device **1600** and identifies it with a particular input device distributor; and a user ID **1806** which is derived from the software running on the PC **302** and which identifies uniquely with the user location. Note that the message packet includes other necessary information for the proper transmission for point to point.

Referring now to FIG. **19**, there is illustrated a more detailed block diagram of the routing of the message packets in order to present the framed information to the user. As is mentioned hereinabove, when the user scans a bar code **1606** using the input device **1600**, an input device program running on the user PC **302** is operable to interpret the information output by the input device **1600** and generate a message packet for transmission over the GCN **306**. The input device program assembles the message packet such that it is directed to the ARS **308** disposed on the GCN **306**. The message packet contains several pieces of information including the input device ID **1804** which links it to the input device distributor, the user ID **1806** which identifies the particular user using the input device **1600**, and bar code information describing a particular product of interest to the user. This message from the PC **302** is transmitted over a path **1900** to the ARS **308** where the ARS database **310** is accessed to cross reference the ID information **1804** and bar code information **1802** to a particular advertiser and input device distributor. The ARS **308** returns a message packet over a path **1902** to the user PC **302** which contains routing information as to the location of various other sites disposed on the GCN **306**, for example, the advertiser server **312** and input device distributor site **1616**.

It can be appreciated that other information can also be provided by the ARS **308** which more closely targets the particular user of the input device **1600**. For example, if it is known that a particular input device **1600** is sold in a certain geographic area, this information can be useful in targeting the particular user with certain advertising information relevant to that geographic area. In any case, the information returned from the ARS **308** over path **1902** provides enough information for the input device program running on the user PC **302** to identify a number of other sites disposed on the GCN **306**. The user PC **302** then processes the return message packet and routes another message packet over a path **1904** to the advertiser server **312**. The advertiser server **312** then returns product information of the particular product in which the user was interested back to the user PC **302** over a path **1906**. Similarly, the user PC **302** routes information (e.g., the URL of the input device distributor site and the user profile) to the input device distributor site **1616** over a path **1908** in order to obtain information back over a path **1910** for framing any banners which identify the input device distributor. Additionally, the user PC **302** forwards a message packet to the E-commerce site **1618** over a path **1912** in order to return information regarding any particular advertisements the input device distributor wants to display to the user. The advertisements are returned to the PC **302** over a path **1914**.

Referring now to FIG. **20**, there is illustrated a block diagram of a browser window according to the disclosed embodiment. The browser window **2000** is partitioned into a plurality of areas for framing specific information. A bar code area **2002** displays that product information in which the user was interested; an input device-specific area **2004** displays information about the input device distributor; and an E-commerce area **2006** displays advertising information that the input device distributor selects for display according to this particular user and input device **1600**. As mentioned hereinabove, a program operable to process scanned bar code information with the unique input device **1600** develops the browser window by partitioning it into specific areas for the framing of information. Therefore, information returned from the E-commerce site **1608** is passed through the GCN **306** to the particular E-commerce frame **2006**. Similarly, information about the particular product of interest is returned from the advertiser site **312** across the GCN **306** to the particular bar code specific area **2002**. Information placed in the input device specific area **2004** is information about the input device distributor which is returned from the input device distributor site **1616** across GCN **306**.

Referring now to FIG. **21**, there is illustrated a structure of information contained in the ARS database. The ARS database **310** contains a variety of information required to properly interrogate and assemble packets for obtaining information from the various sites disposed on the GCN **306**. The ARS database **310** has a database structure **2100** which contains addresses for the web sites containing the product information requested by the user when scanning the bar code **1606** with the input device **1600**. Under a Product heading **2102** are listed the particular bar codes and associated routing information for addressing the respective server location. For example, the ARS server **308** may contain any number of advertisers having unique URL addresses associated therewith. Therefore, the bar code **1606** of a particular product is associated with a unique URL address which routes any request for information of that product to that particular advertiser's site. Also part of the ARS database structure **2000**

is a heading of Input device **2104** under which is the input device ID **1804** and the distributor associated with that input device ID **1804**.

It can be appreciated that there may be a number of distributors using the disclosed architecture such that each distributor has an ID embedded in the input device **1600** which uniquely identifies that input device with the particular distributor. Therefore, the unique input device ID **1804** needs to be listed with the respective distributors of that input device **1600** in order to process the information that needs to be framed and displayed to that particular user. Another heading under the ARS database structure **2100** is a user heading **2106** which contains profile information associated with that particular user ID **1806**. As mentioned hereinabove, the user ID **1806** is obtained via the input device software running on the PC **302** and upon installation or subsequent configuration may request that the user input certain profile information which may be used to target that particular user with products and services which identify with that user profile. The ARS database structure **2100** also contains an E-commerce heading **2108** which contains information related to the bar code **1606** and an advertisement that may be triggered by the request for that information. For example, any bar code **1606** associated with a paper source **1602** can be associated with the specific information in the ARS database **310**. A user wishing to obtain information about a specific soft drink may, in fact, trigger an advertising response of a competitor product. Similarly, the user interested in information about that particular soft drink may also trigger information which is relevant to that particular product or a product which may normally be served in conjunction with that soft drink. Furthermore, if the user profile indicates that this individual has significant interest in finance or insurance, the request for information regarding this particular bar coded product may trigger advertisement from an E-commerce server **1618** related to information about finance and insurance. It should be noted that the information described as contained within the ARS database structure **2100** is not limited to what has been described, but may comprise any number of pieces of information used to present desired information to the computer display of the user.

Referring now to FIG. **22**, there is illustrated a flowchart of the process of receiving information from the user's perspective, and according to the disclosed embodiment. The input device software running on the user's PC **302** runs in the background until activated by output from the input device **1600**. Therefore, flow moves to a decision block **2200** where if a scanned input does not occur, flow moves out the "N" path and loops back to the input of decision block **2200**. On the other hand, if scanned input information is received, flow moves out the "Y" path to a function block **2202** where the input device software assembles a message packet containing the bar code information, the input device ID **1804** and the ARS **308** URL address. Additionally, the browser is launched in which this information is placed for transmission to the ARS **308**. Flow then moves to a function block **2204** where the browser is partitioned into any number of areas in which information is displayed when obtained from the input device distributor site **1616**, the E-commerce site **1618**, and the advertiser server **312**. It should be known that although three frames are shown in the particular window **2000** of this embodiment, the number of frames displayed in the window **2000** is limited only by the available real estate of the window **2000** area itself.

After the input device software partitions the browser window into one or more frames in preparation of receipt of return information, flow moves to a decision block **2206** where the computer waits for information to be returned from the various sites disposed on the GCN **306**. If information is not returned, flow moves out the "N" path and simply loops back to the input to continue monitoring for receipt of the information. If information has been received, flow moves out the "Y" path to a function block **2208** where routing information for each frame (or partitioned area of the window **2000**) is inserted into one or more packets for transmission to the various sites. The various sites then return the requested information back to the PC **302**, as indicated in function block **2210**. Flow is then to a function block **2212** where the proprietary software working in conjunction with the hosted browser places the returned information into the respective frames of the window. The user, viewing the display at PC **302**, then perceives a variety of information, one of which is the particular product information which he or she requested, in addition to input device distributor information, and possibly other advertisements based upon the user's profile.

Referring now to FIG. **23**, there is illustrated a flowchart of the process according to the ARS. The ARS **308** is operable to decode and process messages received from the GCN **306**. Therefore, flow is to a decision block **2300** where, if bar code information is not received, flow is out the "N" path with loop-back to its input. If bar code information has been received, flow is to a function block **2302** where a matching process occurs to link the bar-coded product information to its respective manufacturer. The ARS database **310** also associates the URL address of the manufacturer's server. When a match is found, the ARS **308** begins to assemble a message packet of information for transmission back to the PC **302**, as indicated in function block **2304**. The message packet contains the product information and the URL address of the manufacturer's website. Flow then moves to a decision block **2306** where the input device ID **1804** is compared with the list of input device IDs issued by the particular input device distributor. If the input device ID **1804** is validated, flow moves out the "Y" path to a function block **2308** where the message packet is appended with the input device ID **1804** and distributor routing address. Flow then moves to a decision block **2310** where the ARS **308** determines if any E-commerce information is to be associated with a particular input device ID **1804**. If so, flow is out the "Y" path to a function block **2312** where the message packet is appended with the E-commerce routing string. The E-commerce routing string provides addressing for the E-commerce server **1618**. Flow then moves to a function block **2314** where all message packets are returned back to the PC **302** for processing.

Referring back to decision block **2306**, if the input device ID **1804** is determined to be invalid, flow moves out the "N" path and jumps forward to the input of decision block **2314**, since the lack of an input device ID **1804** interrupts the link to any advertising provided by the E-commerce server **1618**. At this point, the only information provided is the link to the advertiser server **312** for return of product information. Referring now to decision block **2310**, if no E-commerce information is available, flow moves out the "N" path and jumps forward to the input of function block **2314** where the message packet back to the PC **302** contains only the URL of the advertiser server **312**, the bar code information, the distributor server **1616** address and input device ID **1804** information.

Referring now to FIG. **24**, there is illustrated a flowchart of the process performed at the E-commerce site. The E-commerce server **1618** receives the message packet from the user PC **302**, as indicated in function block **2400**, and decodes the packet to perform a match with the bar coded information. Moving on to a decision block **2402**, if the match is unsuccessful, flow is out the "N" path to a function block **2404**

where the match is rejected. A message may be returned to indicate that a problem occurred and the user may need to re-scan the product bar code **1606**. If a successful match occurs, flow moves out the "Y" path to a function block **2406** where the input device ID **1804** is matched with the bar code product information. The bar coded information may be distributed to customers over a large geographic area. However, the input device **1606** may be coded for certain geographic areas. For example, an input device **1600** having an XXX ID may be restricted for sale in the Southwestern United States while an input device **1600** having a YYY ID may be sold only in the Northeast. In this way, geographic areas may be targeted with advertising more appealing to that particular area. Advertising returned to the user PC **302** may be focused further by obtaining a user profile when the software or input device **1600** are installed. In this way, advertising may be focused based upon the user profile. Therefore, flow moves to a function block **2408** to lookup the E-commerce action based upon the input device ID **1804** and the bar code information. Flow moves to a function block **2410** to assemble all the information into a packet for return to the user PC **302**. The product information and/or user profile information may be returned. Flow is then to a function block **2412** where the message packet is transmitted.

Referring now to FIG. **25**, there is illustrated a general system block diagram of a multi-purpose input device **2500** used in conjunction with a software interface **2505**, according to a disclosed embodiment. A multi-purpose input device **2500** (hereinafter called a "mouse") is provided having capabilities comprising traditional positional input of information commonly associated with a computer mouse, and scanning capabilities of the input device **1600** mentioned hereinabove, for reading optical indicia. The user connects the mouse **2500** to the PC **302** through any of one or more conventional ports **2504**, such as a PS/2 port or a Universal Serial Bus (USB) port. Notably, operation of the mouse **2500** is not limited to only these types of connections, but may also be utilized with a wireless connection, and other connections used for computer input devices. Additionally, the input device can be connected with the wedge of FIG. **17**, thus requiring a single input for the keyboard **1610** and the input device **2500**.

Since more and more products are being sold using bar codes, it can be appreciated that a user having the mouse **2500** can optically scan bar codes of a multitude of products in order to obtain more information about the product. Information about these products can be made immediately available to the user from the manufacturer for presentation (via a display **2502**) by the user's computer **302**. This feature is facilitated by the implementation of the user computer **302** and the vendor server **312** having information about the product being disposed on a common network, the GCN **306**. In this embodiment, the network is a global communication packet-switched network **306**, one example of which is known as the Internet. Beyond simply displaying information about the product in which the user is interested, the vendor may include additional advertising information for display to the user such as information about other promotions, products, or services provided or sold by the vendor.

Similarly, avenues of providing bar codes to the consumer other than on the product itself, can be through catalogs of advertisements or information in newspapers or periodicals where the user simply scans the bar code associated with the advertisement using the disclosed mouse **2500** to obtain further information. Therefore, there is provided the paper source **1602** having contained thereon the advertisement **1604** in the form of a graphic or even textual format, and the associated bar code **1606**. (Note that the disclosed concept is not limited to scanning of the bar code **1606** from the paper source **1602**, but is also operable to scan the bar code **1606** on the product itself, whether the bar code is on a planar or non-planar surface. Additionally, the mouse **2500** can be any type of device that will scan any type of image having information encoded therein, or magnetic medium having encoded information, such as credit cards.) The bar code **1606** by itself is incompatible with any kind of network for the purposes of communication therewith. It is primarily provided for a retail-type setting. Therefore, the information contained in the bar code **1606**, by itself, does not allow for anything other than identification of a product, assuming that one has a database **1614** associated with the user PC **302** (or remotely accessible) which contains information as to a correlation between the product and the bar code **1606**.

In operation, the product code of a product is provided in the form of the bar code **1606**. This bar code **1606** is the "link" to a product. The disclosed architecture is operable to connect that product information contained in the bar code **1606** with a web page of the vendor (or manufacturer) of that product by utilizing the bar code **1606** as the product "identifier." During the scanning operation, the mouse **2500** reads the bar code data **1606** which data is then passed therefrom into the port **2504**. The software interface program **2505** running on the PC **302** provides routing information to facilitate connection over the GCN **306** to an intermediate location (the ARS **308**) also disposed on the GCN **306**. This can be accomplished by the software interface **2505** launching the browser program on the PC **302** to facilitate the connection to the intermediate location (i.e., the ARS **308**) over the GCN **306**, or by incorporating the browser function into the software interface **2505** such that the software interface **2505** performs all of the necessary functions to make the connection to the GCN **306**. Subsequent discussion will revolve around the software interface **2505** having the browser functionality incorporated therein. In either case, when the connection is made to the ARS **308**, the ARS **308** then performs the necessary steps to cause the software interface **2505** to connect to the vendor (or advertiser) server **312**, while also providing for an accounting step, which was described in greater detail hereinabove.

The connection is made to the ARS **308** by sending a message packet (which includes the product bar code number and appended routing information) to the ARS **308** by the resident software interface **2505** (in the case of consolidated software functionality) in the PC **302**. This is facilitated by intermediate routing information stored in the software interface **2505** indicating the network address to which node on the GCN **306** the scanned bar code information is to be sent, i.e., to the ARS **308**. It is important to note that the information in the bar code **1606** must be converted from its optical image to numerical values which are then ultimately input to the input port **2504** of PC **302**, and converted into data compatible with software interface **2505** residing on the PC **302** (in this case, an HTML language which facilitates communication common to that of a browser program). If another type of communication program were utilized, then it would have to be converted into a language compatible with that program. When the scanned information is input to the PC **302** through the port **2504**, the software interface **2505** receives the scanned information and assembles a communication packet comprised of the URL of the ARS **308**, the product ID encoded in the product bar code, and the user ID which uniquely identifies the software interface **2505** of the user. Of course, the user could actually key in the information of the bar code **1606** using the keyboard **1610**, and then append the appropriate intermediate routing information thereafter.

As part of the configuration for using the mouse **2500**, the PC **302** hosts the software interface **2505** which is operable to interpret data transmitted from the mouse **2500**, and to create a message packet having the scanned product information, routing information, and the user ID which identifies the user location of the mouse **2500**. The software interface **2505** loads at boot-up of the PC **302** and runs in the background. In response to receiving a scanned bar code **1606** or user selection through the mouse **2500** of the bar code mode as a prelude to the bar code scan operation, the computer operating system brings software interface **2505** into the foreground for interaction by the operating system. The software interface **2505** program then inserts the necessary information into the message packet to the ARS **308**. The message packet is then transmitted to hardware interface **304** across the global communication network **306** to the ARS **308**. The ARS **308** interrogates the message packet and performs a lookup function using the ARS database **310**. If a match is found between particular parameters of the message packet and associated entries in the database **310**, a return message packet having the matched information is sent back to the PC **302** for processing.

In one embodiment, the software interface **2505** running on PC **302** functions to partition the browser window displayed to the user into several individual areas. This is for the purpose of preparing to present to the user selected information in each of the individual areas (also called "framing"). The selected information can comprise the product information which the user requested by scanning the bar code **1606** using the mouse **2500**, information about the product vendor which establishes the identity of the company associated with that product, and at least one or more other frames which may be advertisements related to other products that the vendor sells. The information displayed in the frames can be essentially any information which the vendor chooses in accordance with agreements to which the vendor subscribed when using the ARS **308** for intermediate routing. Note that the advertisements displayed by the vendor server **312** may be related to the product of interest or totally unrelated. For example, if a user scans the bar code **1606** of a soda from Company A, the vendor server **312** may generate an advertisement of a new soft drink being marketed by Company A, that it sells. On the other hand, the vendor server **312** may also structure the display of information to the user such that the user requesting product information of a Product X may get the requested information of Product X along with advertisements for a competing item Product Y. Essentially, the vendor is free to generate any advertisement to the user in response to the user requesting product information of the vendor, in accordance with any constraints of the software interface **2505**.

The return message packet transmitted from the ARS **308** to the PC **302** is then processed to obtain the network address of the requested product information, which in this case, is the address of the advertiser or vendor server **312**. The software interface **2505** then constructs a message packet to the vendor server **312** comprising the vendor server address and the product code of the scanned product, which message packet is transmitted back across the GCN **306** to the advertiser server **312**. The advertiser server **312** processes the received packet and restructures a return message packet including the particular requested product information for transmission back to the PC **302**. Where framing occurs, the PC **302** then retransmits a message to the other sites to obtain the information which is to be displayed in the other frames of the user display **2502**.

It can be appreciated that the mouse **2500** and software interface **2505** may be sold as a package such that the mouse **2500** is operable only with the software interface **2505**. In this scenario, the mouse **2500** is encoded with a unique mouse ID which must be checked from the software interface **2505** prior to operation. If the mouse **2500** is that which was packaged with the software interface **2505**, operation is ensured. If the user attempted to use the mouse **2505** with another computer system running a different software interface **2505**, certain functions of the mouse could be disabled, perhaps leaving the mouse **2500** operable to perform only the basic mouse functions of positional translation and user selection. Alternatively, as long as the mouse **2500** is used with a software interface **2505** which is manufactured by the same vendor as the mouse **2500**, the mouse **2500** will be fully operational, providing both scanning/read functionality, as well as basic mouse operations. However, when the user attempts to use mouse **2500** with a software interface that was not manufactured by the same vendor as the mouse **2500**, the mouse **2500** loses all functionality. The variations on operability based upon compatibility with other applications are numerous.

In another embodiment, a distributor enters into a contractual relationship with the vendor of the software interface **2505** to have the mouse **2500** linked specifically with their products and a respective network distributor server **1616**. In this case, the mouse **2500** has stored therein a distributor ID (or mouse ID) wherein scanning (or reading) of a product bar code results in the product ID, the distributor ID, user ID, and the routing information being transmitted to the ARS **308** in order to obtain information about that particular product. The distributor ID stored in the mouse **2500** establishes its relationship to the mouse distributor. The software interface **2505** running on the PC **302** operates to decode scanned bar code information (or magnetically sensed information), and assembles the message packets to automatically route the message packets across the GCN **306** such that the one or more remote sites disposed on the GCN **306** return information to be framed for presentation to the user. A return message packet from the distributor server **1616** can further point to an e-commerce site **1618** which results in the display of more information in one of the frames on the display **2502** of the user. Alternatively, the distributor can provide all of the necessary network links to the various additional sites (e.g., the e-commerce site **1618**) in the ARS database **310**, such that information returned from the ARS **308** to the user PC **302** contains multiple links which the distributor wants the user to view in response to using the particular distributor-associated mouse **2500**.

Referring now to FIG. **26**, there is illustrated a block diagram of the mouse **2500** having positional and indicia-reading capabilities. The mouse comprises a read head **2600** for detecting optical indicia such as bar codes. Conventional positioning features are provided by a positional interface **2602** which functions to input information to the user PC **302** such that a graphical pointer moves corresponding to the movement of the mouse **2500**. Additionally, the mouse has one or more mechanical mouse buttons **2604** which the user depresses to perform a variety of user functions, such as a selecting function, a drag-and-drop function, and other functions offered by the software interface **2505** or other software packages (e.g., macro execution, hot-key functions, etc.). Each of the read head **2600**, positional interface **2602**, and the mouse buttons **2604** connect to an onboard microcontroller **2608** to process the various inputs provided therefrom. The microcontroller **2608** also has associated therewith a memory **2610** for storing information during processing by the microcontroller **2608**. The memory **2610** may be a non-volatile memory such that data stored therein will not be lost when a loss of power to the mouse **2500** occurs. If a non-volatile

memory, the memory **2610** may be configured store a unique ID or serial number of the mouse **2500**. This feature is desirable when the mouse **2500** is required to be used with only a particular software interface **2505**. Similarly, the memory **2610** may store a unique handshake code which is passed to the software interface **2505** upon power-up or use, such that a handshaking operation is performed between the software interface **2505** and the mouse **2500** prior to authorizing operation of the mouse **2500**. The memory **2610** may also be incorporated within the microcontroller circuitry **2608**.

From the microcontroller **2608**, the processed information (positional and/or sensed) is passed to a serial interface **2612** for transmission to the user PC **302**, according to a compatible communication protocol. In one embodiment where the mouse **2500** connects to the PS/2 port of the user PC **302**, the information is converted to an RS-232 serial protocol for transmission to the user PC **302**. In another embodiment where the mouse **2500** connects to the USB port of the user PC **302**, the serial interface **2612** is operable to convert the information according to a USB protocol. In legacy systems, the mouse **2500** may connect to an available D-type serial port or to an adapter card to accomplish the same results. In any case, the PC **302** is operable to receive and process the serial information to obtain the appropriate positional and/or sensed information. Notably, the serial interface **2612** may also be a wireless interface such that communication is accomplished by infrared or even an RF link to the user PC **302**.

In another embodiment, the read head **2600** of the mouse **2500** may be a magnetic reader such that numbers stored on magnetic media may be scanned and read. This feature is utilized where product information is stored on magnetic strips which are sensed by the mouse **2500**, such as credit cards, or other implementations having such readable medium. In this case, it can be appreciated that the mouse **2500** may incorporate two such read heads **2600**, one configured to read optically encoded indicia, and the other to read magnetically stored information, and possibly a third read head **2600** for sensing text information for ultimate optical character recognition (OCR) by a third-party software package, or the software interface **2505** having such recognition capabilities. When reading text, the user passes the mouse **2500** over the text area **1604** to be read. The software interface **2505** then performs an OCR function (or passes the information to another application which performs the OCR function) to obtain the desired results.

In any of these scenarios, the particular function being performed (scanning a bar code, functioning as a positional device, reading text, or reading magnetic medium) can be manually controlled or designed to occur automatically. In a default state, the mouse **2500** will function as a conventional mouse by providing only positional input to the user PC **302**. However, when a certain mouse button **2604** is depressed alone or in combination with another mouse button **2604**, other functions can be enabled. For example, where a bar code **1606** is to be scanned, the user can be required to depress one or more of the mouse buttons **2604** prior to the scanning process to invoke the software to prepare for the receipt of bar code information. Similarly, the user can be required (according to programmable functions of the software interface **2505**) to depress one or more of the mouse buttons **2604** to enable the text reading function for OCR. These user-definable functions are programmable within the software interface **2505**. In the case of a 3-button mouse **2500**, the selection of mouse buttons **2604** is programmable in the software interface **2505** in that the user may desire to have the third button (right button) programmed for the bar code scanning operation, the second (or middle) button for the magnetic read function, etc. The buttons may also be programmed such that by depressing the middle and right buttons together invokes the text-reading operation. The disclosed architecture is not limited to a 3-button mouse **2500**, but may also be used in conjunction with a mouse having fewer or more buttons **2604**, as would be compatible with the software interface **2505**.

It can be appreciated that the read capabilities of the disclosed mouse **2500** may be implemented such that user intervention is not required, but that the mouse **2500** and software interface **2505** operate cooperatively whereby the first instance of either scanning a bar code, reading magnetic medium, reading text, or performing basic mouse positional functions, is detected automatically. In this way, the user is not required to manually intervene by sending commands to the software interface **2505** by depressing one or more mouse buttons **2604**, or using the keyboard to configure the software interface **2505** prior to reading the desired image, text, or magnetic medium. The software interface **2505** is operable to perform a continuous polling operation of each of the one or more read heads **2600**. Filtering algorithms can be employed in the software interface **2505** to filter out erroneous data provided by the one or more read heads **2600** when not scanning or reading encoded data, but simply using basic mouse operation.

Referring now to FIG. **27**, there is illustrated a diagrammatic view of a computer screen **2702** and the mouse **2500** being swept across a sheet of paper **2704** (or any similar flat surface) with a symbol **2706** in the form of a barcode disposed thereon. However, it should be understood that any type of optical image having encoded therein data would be useful, such as glyph. The display **2702** has associated therewith an optical indicator **2708** indicating the relative position of the mouse. When the mouse **2500** is moved, this indicator **2708** will move on the screen. This provides the feedback between the user and the application currently running on the screen **2702**. The application running on the screen, in one embodiment, is any type of application the user may be utilizing at the present time. However, the user may want to input information into his computer while viewing one screen from the sheet **2704**. For example, as noted hereinabove, one example is that associated with a television guide. If the user wished to scan the symbol or barcode **2706** while in the application, the user would merely pass the mouse **2500** thereover. Although the application is currently running, in the background, the detection would take place and a connection made to the web and that information returned and displayed on the user's screen. However, it should be understood that the information could merely be retained and need not be displayed. The disclosed embodiment will display this information.

Referring now to FIG. **28**, there is illustrated a flowchart depicting the operation of moving the mouse and detecting whether there is positional or non-positional information. The mouse **2500**, as described hereinabove with reference to FIG. **26**, is a device that can determine both positional information and it can also determine information regarding the optical characteristics of the surface over which it is being moved. In one embodiment, that disclosed hereinabove with reference to FIG. **26**, there is provided a separate positional detection structure and a separate optical section for extracting information from the surface with respect to the optical characteristics thereof. However, there are numerous optical input devices, typically referred to an "optical mouse," which do not require any mechanical parts. One type utilizes a pad with a grid disposed thereon for passing the optical mouse thereover. This is described in U.S. Pat. No. 4,751,505, issued Jun. 14, 1988, which is incorporated herein by reference. Another type is that which looks at the scattering effect from the

surface thereof to determine movement as a function of changes in the surface over which it is being moved. This is described in U.S. Pat. No. 4,794,384, issued Dec. 27, 1988, which is incorporated herein by reference. Either of these devices could be utilized to determine through processing steps whether the characteristics of the surface represented those of a predetermined optical symbol with encoded data therein, such as a barcode. For example, the optical translator device of U.S. Pat. No. 4,794,384 can determine if there are certain predetermined parameters associated with the surface over which it is being scanned that correlate with a desired symbol.

Referring further to the flowchart in FIG. **28**, the program is initiated at a start block **2802** and then proceeds to a decision block **2804**. At decision block **2804**, the system determines whether movement has been detected, this being a positional change. If not, the program will move back to the input of block **2804**. When movement is detected, the program will flow to a function block **2806** to calculate the direction and the magnitude of the movement. Once this is calculated, the program flows to function block **2808** to reposition the coordinates in the program, both with respect to the display and also the program being currently operated. The program then flows to a decision block **2810** to determine if a barcode has been detected. As noted hereinabove, the barcode need not be the only symbol that is detected, but is used for illustrative purposes. This detection would be related to such things as detecting a periodic sequence of wide and narrow regions. If such has been detected, indicating that a barcode or similar optical symbol with decoded data therein has been detected, the program will flow along a "Y" path to a function block **2812** to run a launch routine and then back to the input of decision block **2804**. If no barcode is detected, the program will flow from block **2810** to block **2804**.

Referring now to FIG. **29**, there is illustrated a flowchart depicting the launch routine. The program is initiated at a block **2902** and then proceeds to a decision block **2904** to determine if a complete symbol has been received. When the varying wide and narrow regions are detected, they are detected, decoded in accordance with a predetermined decoding scheme stored as being different logic values. This is conventional with respect to a barcode in any other type of optical symbol with encoded data therein. A complete symbol indicates that the entire symbol has been scanned and that it is a viable symbol, i.e., it is a barcode. If so, the program flows along a "Y" path to a function block **2906** to launch the web browser or other routine that will interconnect with the web, i.e., provides a gateway to the web or network. Once interconnected with the web, the program flows to a function block **2908** to assemble a packet and transmit this packet via the link made by the browser to the web. This, as described hereinabove, goes to the ARS **308** which then returns information back to the browser and interconnects to the web. This is indicated by a function block **2912** to actually connect to the web at the position associated with the information in the scanned barcode. This browser can be launched and visible immediately on the user's PC, or it can be maintained in the background until the web is connected. Once the web is connected to and information returned, then this browser is displayed in the foreground. However, it should be understood that the browser need be nothing more than a method for obtaining information and it may be that this browser does not obtain information that is to be displayed by the user, but, rather, is to be used for other reasons such as archiving, etc. The display operation is indicated in a function block **2914**. The program then flows to an End Block **2916**. If no symbol were determined to be present in the decision block **2904**, the program will flow therefrom along an "N" path to block **2916**.

Referring now to FIG. **30**, there is illustrated an alternate embodiment for utilizing an input device such as a mouse. FIG. **30** depicts a display **3002**, which has an application running thereon. There are numerous areas for text, input areas, fields and such. There is also provided a glyph region **3004**, which can have associated therewith a barcode or any type of optical indicia disposed thereon. When the mouse indicator, represented by an arrow **3006** is moved from the first position to a second position, indicated by a mouse indicator **3008**, this glyph region **3004** is read. Alternatively, there could be location on the display **3002**, such as glyph region **3004**, that does not require scanning, but, rather, merely requires disposing the arrow **3006** thereover and "clicking" the mouse once or twice. This would retrieve coded or stored information from the memory for use with the system of the present invention.

Referring now to FIG. **31**, there is illustrated a flowchart for the embodiment of FIG. **30**. This flowchart is initiated at a block **3100** and then proceeds to a function block **3102** to detect glyph **3004** as being scanned. However, this decision block **3102** merely determined whether a mouse has been utilized by the individual to cause the program to extract information from its memory or that the mouse cursor or pointing indicator has been moved in the general location of the glyph region **3004**. As described hereinabove, this could merely require passing over a number of "bars" in a barcode or it could merely require double clicking on a particular location termed "update." There is no reason to actually scan a barcode, since this is not an optical scanning operation; rather, it merely indicates that information is to be retrieved regarding particular and unique encoded information. Once it is determined that scanning of the glyph region **3004** or a selection thereof has occurred, the program will flow to a function block **3104** to connect to the web. Information utilized in the program that is associated with the glyph region **3004** is assembled into the packet such that it can be sent to the ARS **3008**. The program will flow to the function block **3106** indicating retrieval of that information from the manufacturer or the E-commerce site **1618**. The program will then flow to a function block **3108** to perform an operation in accordance with the received information. In one example, this is an update operation wherein certain information is retrieved into the program running on the computer screen **3002**. The program then flows to an End Block **3110**.

In operation, one example of the disclosure of FIG. **30** is set forth herein. In this example, a user purchases a program having regions associated therewith. Typically, most programs will provide embedded within the program the network address or URL of a desired information source. The program with this situation would be when certain network addresses or pointers change. This is a very common occurrence when individual web pages are examined and the "links" associated therewith are selected. These links were normally placed there for informative purposes and the links may have changed. When this occurs, an individual moving through and selecting these links comes back with no information, i.e., the web site cannot be found. Utilizing the disclosure of FIG. **30**, a software manufacturer can merely provide a code which is associated with the provided or ARS **308**, which code would be recognized by another program underlying the currently operating program, which would recognize a proprietary code which is to be sent to the ARS **308** for association with its look-up table. If the code is found, then an address can be relayed back to the browser. Therefore, the manufacturer of the software need only maintain an update

address at the ARS **308** that will match the embedded code in the program in order to provide the appropriate information.

In an alternate example, suppose that an E-commerce operation were conducted wherein operation of a popular accounting program would result in another vendor desiring to capitalize on the use of that program. For example, there may be a desired report that is selected in the accounting program by a user that would "trigger" access to the web to point to an E-commerce vendor that would have a desire to send further information to the user as a result of the triggering event. It could be that a window would be opened up on the lower portion of the computer screen or it could even be a banner continually running on the user's screen. Whenever the user selected a particular function, then this would be recognized as a triggering event, and encoded information extracted from the underlying program and sent to the ARS **308** for determining the location on the web of the E-commerce site **1618**.

Although the preferred embodiment has been described in detail, it should be understood that various changes, substitutions and alterations can be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A method for connecting two locations on a network utilizing a pointing device at the first location interconnected to a user's computer at the first location, comprising the steps of:

providing both positional and code reading capabilities in the pointing device;

operating the pointing device with the code reading capability thereof to receive an encoded optical code, encoded with information representative of a location on the network of a second location, while operating a first program on the user computer which utilizes the positional capabilities of the pointing device on an external surface that is related to an optical indicator on a user display to indicate the relative position of the input device to the external surface during running of the first program that performs functions other than connecting two locations;

running a second program at the user's location;

the operation of the pointing device operatively coupled to the operation of both the first and second programs;

detecting with the second program both movement of the pointing device in conjunction with reading of the encoded optical code by the pointing device proximate to the encoded optical code;

connecting with the second program the first location to each of a plurality of the second locations over the network through respective routing locations indicated by the information encoded in the read encoded optical code in response to the detecting of the movement of the pointing device in conjunction with the reading of the encoded optical code by the pointing device proximate thereto; and

receiving information from each of the second locations transmitted therefrom to the first location for simultaneous display thereof on the display;

wherein the step of connecting comprises:

assembling a packet of data with the information extracted from the encoded optical code contained therein;

transferring the assembled packet to an intermediate network location remote from the first location;

providing at the intermediate location a database having contained therein a plurality of routing addresses on the network and corresponding encoded optical information;

comparing the information disposed in the received packet at the intermediate location with information in the database to determine if there is at least one corresponding routing address disposed therein corresponding with the encoded optical information;

if a match exists, then returning the matching information in the form of the routing address to the first location; and

connecting the first location to each of a plurality of the second locations in accordance with the network address information returned thereto from the intermediate location.

2. The method of claim **1**, wherein the step of receiving information comprises displaying the information received from the second location when received therefrom.

3. The method of claim **1**, wherein the step of connecting includes the step of watching a web browser program which is operable to interface with the network.

4. The method of claim **1**, wherein the code reading capabilities include optical scanning and wherein the step of operating the pointing device with the code reading capability comprises scanning the optical code.

5. The method of claim **4**, wherein the encoded optical code is a barcode.

6. The method of claim **4**, wherein the encoded optical code is an ISBN code.

7. The method of claim **4**, wherein the encoded optical code is an EAN code.

8. The method of claim **4**, wherein the encoded optical code is disposed on a flat surface.

9. The method of claim **4**, wherein the encoded optical code is disposed on a product.

10. The method of claim **4**, wherein the encoded optical code is encoded with information regarding the product and associated with a product.

* * * * *